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JANUARY TO JUNE, 1918.

(FOR SPECIAL HEADINGS SEE UNDER BOOKS, CERTIFICATES, LAW NOTES, NURSERY NOTES; OBITUARY; PLANT PORTRAITS; PLANTS, NEW; SCIENTIFIC COMMITTEE, SOCIETIES, AND ILLUSTRATIONS.)

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Gardeners' Chronicle
No. 1619.—SATURDAY, JANUARY 5, 1918.

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ILLUSTRATIONS.

THE MEALY PLUM APHIS

SOME years ago I read carefully the various published accounts of the life history of the Mealy Plum aphis (Hyalopteris pruni), and since have made many personal observations, of a somewhat detached nature, regarding the habits of the insect. During the past two years I have taken the matter more seriously, with the result that I hope I have settled the question of the life-cycle of this pest of the Plum. The damage done by it is not considered by some writers to be of a very serious nature, but on this point I differ from them. Those in this region who see the dirty appearance of affected Plums can come to no other conclusion than that the damage done must seriously affect the economy of the plant. It is not my intention, at present, to deal with remedial measures, important as they may be, but to give the results of observations carefully carried out almost daily for several months in succession.

In his report on Economic Entomology for 1907 Mr. F. V. Theobald stated that the Mealy Plum aphis appears in July, usually the latter part of the month, but in the previous year he stated that they made their appearance early in the month. Farther on in the report it is said that in the early autumn they all disappear from the Plums, and that unfortunately nothing definite regarding the life-cycle was known; that De Geer had stated he found this aphis on an Apricot, and described both winged male and wingless female; that in September he found an egg with a woolly coat fixed near a leaf-bud. This latter observation of De Geer seems to me the nearest I have seen.

In his Report for 1910 Mr. Theobald says: "It is now known that the Mealy Plum aphis, Hyalopteris pruni, is another form of the Reed aphis, Hyalopteris arundinis, and that a migration takes place between the two host plants."

Buckton states, in his "Monograph": "I consider Hyalopteris arundinis to be distinct from Hyalopteris pruni, from which it differs both in size, in form, and habit." Only the winged and wingless viviparous female are described in Buckton. No mention of "male" "oviparous female," or "eggs" are mentioned.

Dr A. D. Imms, in his Lectures, 1916, at the Manchester University, speaking of the Mealy Plum aphis and their migration, said that they go to Rushes and Aquatic Grasses.

In the *Journal* of the Board of Agriculture for October, 1916, Mr. J. C. F. Fryer has an article on Plum aphides, and gives the life-history of the Mealy Plum aphis, but states that the life-history has not been worked out in this country. "It is chiefly found on Plums," he writes, "during the latter half of summer, and there is a strong probability that the remainder of the year is spent on Grasses and Reeds. In Russia and the United States of

FIG. 1.—MEALY PLUM APHIS: QUEEN MOTHER WITH LARVAE BEFORE AND AFTER THE FIRST MOULT. × 10.

America it is said to live during the winter and early summer on Plums, and the rest of the year on Reeds, but it can hardly have a similar history in Britain."

I think it will be seen from the foregoing accounts that no British entomologists have taken these matters very seriously in hand, but they have depended to a great extent on the theories of others, and I am afraid that this is the case in regard to most of the species of aphides that inhabit the British Isles.

It will be remembered by those who read my article in the *Gardeners' Chronicle* of December 16, 1916, p. 294, that in a reference to the Mealy Plum aphis I said that I found three wingless females producing young on May 16, and that I should be on the look-out for this species earlier in 1917. I kept my promise, and as I had found eggs that I was almost certain were those of the Mealy Aphis, and as I had not found any other species on a particular tree (Plum), I felt almost sure I was on the right track, and I was. On May 7 I found a speci

FIG. 2.—MEALY PLUM APHIS: VIVIPAROUS WINGED AND WINGLESS FEMALES WITH LARVA AND PUPA. × 8.

men that had hatched out—in fact, it had moulted once before I discovered it. On the next day, the 8th, I found another, which seemed to be about the same age. These I labelled No. 1 and No. 2, taking the order of discovery for numeration, and I made daily notes in my book. No. 1 began to produce young on the 17th (May), No. 2 on the 18th. No. 1 produced one per day until the 20th; on the 21st it had nine, on the 22nd fifteen, and so they went on until one insect, No. 1, had produced 60 by the 31st, No. 2 60 on June 2. It is strange, but one of these specimens was on a shoot where I made my observations in 1916, as the old "tally" was left on. Sixty seems to be the maximum number of young produced by one of what I shall call these queen mothers, that hatch from the egg. These, when first hatched, are of a somewhat light olive-green colour, with a darker shade down the back. As time goes on they become lighter in shade; they are short-legged, sluggish creatures, somewhat burly in shape, and die as soon as their young are produced. That shown in fig. 1 I photographed just after it had produced what I considered its maximum number, and with it are four specimens of its family; the two on the upper part of the figures are before and the other two after the first moult. After the first moult they assume the mealy covering and characteristic markings of the species, and are all wingless females in the first generation (i.e., from the mother queen). These mother queens produce all their family on the same leaf. It is difficult to follow all the specimens, as there are many disturbing elements as the season advances—the presence of two or three species of parasitic flies, caterpillars of the winter moth, spiders, the larvae of hover flies, and others—

FIG. 3.—MEALY PLUM APHIS: OVIPAROUS FEMALE LAYING EGGS, FIVE OF WHICH ARE DEPOSITED AT THE BASE OF THE BUD. × 8.

so that it is necessary to have as many specimens under observation as possible to get anything like a true account of the life-history. The generation produced by the queen mother are all wingless females; these latter produce a mixture of winged and wingless ones, as seen in fig. 2. I found the first specimen with fully developed wings on June 20; they go on producing both forms until towards the end of the season. There is a certain proportion of the winged forms about the third generation that divest themselves of their mealy covering, no doubt in preparation for migration. Whether they have hosts other than the Plum I do not know at present, but there is certainly a large proportion that remains on the Plum all the year. They lay their eggs and propagate on the Plum, and large numbers, after mid-season, take possession of the long, sappy shoots (of the Plum) that are produced in the current year. These shoots in many instances become perfectly smothered with them. In August winged females are produced that retain their mealy covering; these seem to be local migrants, i.e., they only travel from place to place on the same tree. They are not nearly so agile as the winged forms produced earlier in the season. They settle down at the end of the month of August and the beginning of September on a

particular leaf, and there produce a brood of from 12 to 20 wingless forms: these specimens are much smaller than the wingless forms of the early season (vivipara ones); they are of a dirty sulphur colour with a light green band down the back. These I proved to be the egg-laying females, and, as far as I can tell, some only are fertile. Although I have watched very closely I have not been able to find males, but I have many times watched these females lay their eggs, and, as will be seen from the illustration, I have been able to photograph them in fig. 3 in the act of egg-laying. Some of these begin egg-laying in the middle of the month of September; on the 25th I watched two lay their eggs. It is very interesting; they travel backwards and forwards along the shoots until they find a suitable position at the base of a bud. When that is fixed upon they back themselves into position and there deposit the egg; the operation sometimes takes half an hour. They generally select the base of a leaf-bud, more particularly right down in the axil, and mostly on the outer or upper side of the shoot. I watched this operation of egg-laying on September 25, 27, and October 2. I found a single female on October 19; this was about the last. In some cases I found as many as six eggs at the base of a bud, but the more general rule is one. The eggs at the time of deposition are soft and flexible, the skin translucent olive-green, over which is a coat of silvery-looking substance that when examined with the microscope is found to be composed of little white-looking rods. After being exposed to the air for some time the eggs assume a more rigid character. I find that many of the eggs are destroyed by some enemy the nature of which I have not yet discovered. Considering that the eggs are laid so early in autumn and hatched so late in spring I would suggest that this species is not so hardy as some others. It will be observed that the eggs are dormant on the trees for seven months in the year. I have preserved specimens of the mother queen and the oviparous females, which, together with eggs and my field of observation, can be seen by appointment by any one interested. The photographs were taken by myself from the specimens under observation. I feel satisfied that I have been able to lift the veil of mystery and to trace the hitherto obscure life stages of this pest. *J. G. Blakey, Bromsgrove Road, Redditch*

LETTERS FROM SOLDIER-GARDENERS.

WITH THE EGYPTIAN EXPEDITIONARY FORCES IN EGYPT AND PALESTINE.

HAVING been unfortunate enough to be sent from the line owing to sickness, and spending four months among the sand hills in front of Gaza, I arrived by easy stages in Cairo, where, as a result of the attentions of the Red Cross Society, I soon became convalescent, and had the good fortune to be able to visit, on November 9, the show of the Egyptian Horticultural Society. This Society usually holds three exhibitions each season, and I was surprised at the healthy rivalry which existed between the various exhibitors, although no actual competition took place.

It would be unfair to compare this exhibition with Chelsea, or Holland House, or the Royal Caledonian Horticultural Society's shows in Edinburgh, but it was a very creditable show, and was held in the beautiful palace of Shereef Pasha, Sharia el Duwawin, Bal el Louk. After considerable trouble, I was fortunate in securing an introduction to the able and courteous secretary, Mr. Brown, who explained to me Egyptian horticultural methods.

A few notes on the show gathered during the course of the afternoon may be of some interest to readers of the *Gardeners' Chronicle*. Among the most noteworthy exhibits was one in the entrance hall, contributed by the Ministry of Agriculture (Horticultural Section). It consisted of bottled fruits and bottled vegetables. Dried fruits of various kinds were also included, while a most interesting collection of Oranges and Lemons aroused great interest on the part of the public. The following were a few of what were the pick of a very rare exhibit:—

FIG. 4. MEALY PLUM APHIS: OVIPAROUS FEMALES. × 18.

Lemon Hindii, a pink-fleshed Lemon about 17 inches in circumference, and beautiful and juicy when cut. Pomilla, Ponderosa Rabba, and the Sham Lemon were all equal in size to Hindii, and were quite a revelation to me. The Gilza, Rough Skin, Seedless, Adelaide Helvia and Jaffa Sweet, were all varieties of sterling merit. In Oranges, the Navelamcia was outstanding. Mandarine Clementini and Duncan's Grape-Fruit were among the best of a most interesting and educational exhibit

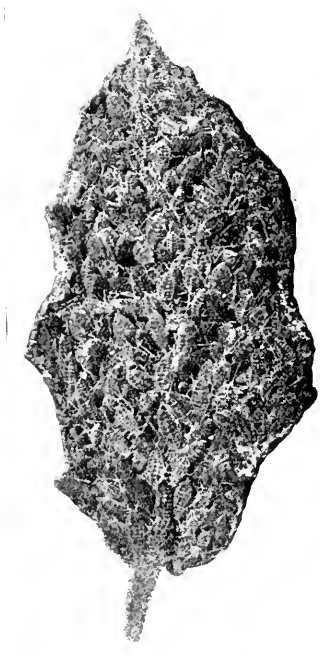


FIG. 5. PLUM LEAF COVERED WITH MEALY APHIS. × 3.

One fruit on each dish had been cut in halves to show the richness of the quality. The Certificate of Merit awarded by the jury was well earned, and the Ministry of Agriculture is to be congratulated on the good work it is doing in fostering the growth of fruits in Egypt. Another most interesting fruit exhibit was contributed by the Traders and Growers' Union, Nurserymen, Gheziret, Dabsha. Staged in quite English fashion, the most conspicuous dishes were Avocada Pear, Persea gratissima, Egyptian Lemon, Citron lanaria, Japanese Kaki, or Diospyros Kaki (these bright scarlet fruits interested me, especially as I had not been able to make a success of them at Tongswood), Mandarines, Syrian Apples, Californian Grape Fruit, Pomelo, Banana, and a most handsome dish of Pomegranates. Another exhibit worthy of its Certificate of Merit award.

Only one exhibit of vegetables was on view, and it was composed of Cauliflowers, Cabbages, Leeks, French Beans, Peas, Beet, Lettuce, Radish, Endive, Tomatos, and Black and White Egg Fruits, the last being the only dish worthy of special notice. In the flower section Chrysanthemums and Roses were most prominent. The exhibit of Border Chrysanthemums disbudded, shown by J. Keatinge, Esq., and awarded a Certificate of Merit, was of sterling quality. The same grower also showed a splendid collection of seedlings grown from seed in 1917; it was composed of Japanese incurved, Singles, and Pompons, which included some really fine sorts, well worthy of being again grown. The Gelzireh Sporting Club was awarded a Certificate of Merit for a group of Chrysanthemums in pots.

In Roses, J. Kershaw, Esq., was awarded the highest award, and a really choice exhibit included the varieties Wm. Sheen, George C. Waud, Viscountess Enfield, Lady Hillingdon, Edward Mawley, Mrs. G. Shawyer, Etoile de France, Dean Hole, Mme. Constant Soupert, Lady Pirrie, Cynthia Forde, and Entente Cordiale.

Mrs. P. W. Stout exhibited a mixed collection which included Roses in variety tastefully staged in vases; also Salvia, Browallia, Brugmansia, and Chrysanthemums, a very attractive and pleasing exhibit. (Certificate of Merit).

Gerbera Jamesonii and its hybrids were well staged by J. S. Cairns, Esq. Hardy Annuals were the subjects displayed by J. Home, Esq., and these were awarded a Certificate of Merit.

The outstanding block of cut flowers was undoubtedly that of J. Hopkins, Esq., and was entirely of Clerodendron splendens. This plant I have never seen in better form or colour (Certificate of Merit). Dahlias found Dr. H. P. Keatinge the only exhibitor, and his exhibit of Dahlia imperialis was most prominent and outstanding.

The entire exhibition was a very successful one, and the thanks of the exhibitors and visitors are due to Mr. Brown, who so successfully carried out the duties of secretary. The duties of a show secretary at home are trying enough, but out here, where English, French, Italian, and Egyptian are gathered together, all speaking their own language, the post must be profoundly difficult. *Charles Shaw, Gardener to C. E. Gunther, Esq., Tongswood Gardens, Hawkhurst, Kent.*

THE ROCK GARDEN.

RANUNCULUS RUTAEFOLIUS

THE pretty Ranunculus rutaefolius, the Rue-leaved Buttercup or Crowfoot, is rare in gardens, though it is an excellent plant for the cool parts of the rockery. The species has pleasing, glaucous, Fern-like leaves and white flowers, with a greenish eye. Although rather cold in its tones, it is a much more pleasing plant than this description would suggest, and grows 6 or 8 inches high. It grows in turf in its native habitats, yet it thrives in flat parts of the rock garden, and I have always found it do best in a situation exposed to the sun, but it needs an abundant supply of moisture. A porous soil of loam, sand, and grit is a suitable rooting medium. It is rather difficult to divide the plant until it is of some size. The nature of the roots would suggest root cuttings as a means of propagation, but I have not been successful in raising plants by this means. *S. Arnott.*

ORCHIDS IN 1917.

DURING the past year the Orchid Committee of the Royal Horticultural Society has awarded nine First-class Certificates and forty-one Awards of Merit to novelties, which is a smaller number than usual. The portraits of these certificated Orchids have been added to the Society's collection, which was begun in 1897, and now numbers 2,384 pictures. The principal exhibits at the R.H.S. shows have been sent by nurserymen.

Messrs. Armstrong and Brown have exhibited continuously, and their awards include two First-class Certificates, thirteen Awards of Merit, and ten Preliminary Commendations. Their Brasso-Laelio-Cattleya Lady Manningham-Buller, which secured a First-class Certificate and the Lindley Medal, was admittedly the finest new Orchid of the year and the best yellow variety ever produced.

Messrs. Charlesworth and Co. obtained four First-class Certificates, ten Awards of Merit, and three Preliminary Commendations. Their Eulophiella Rolfei and Odontoglossum crispum The Premier were remarkable.

Messrs. Sanders, Hassall and Co., J. Cypher and Sons, Stuart Low and Co., J. and A. McBean, and Flory and Black have also contributed to the shows. The silvery-white Brasso-Cattleya Lady Veitch of Messrs. Flory and Black was one of the finest Orchids shown at the fortnightly meetings.

The meetings of the Manchester and North of England Orchid Society have been well patronised, and large numbers of awards have been made by the Committee.

New hybrids have been plentiful, and of these two hundred and sixty have been recorded in the tables published from time to time in these pages. It is interesting as showing the wide interest taken in Orchid hybridisation that while a goodly proportion of novelties are from nurserymen, the greater number has been raised by amateurs. The names of Sir Jeremiah Colman, Sir Geo. L. Holford, Mr. W. H. St. Quintin, Mr. C. J. Phillips, Mr. R. Windsor Rickards, the Duke of Marlborough, Dr. Miguel Lacroze, and Mr. Frederick J. Hanbury, appear frequently in the list of raisers.

Cattleyas, Laelio-Cattleyas, hybrids in which Brassavola Digbyana or Sophronitis grandiflora have been used, Odontoglossums, Odontiodas and Miltonias are still the most popular of Orchids. Most of the novelties have been improvements on existing forms, rather than new crosses likely to give sections with distinctive colours or forms and tending to merge older types, and in some cases nullify the features originally aimed at. For example, the object in using Sophronitis grandiflora and Cochlioda Noezliana as parents was to impart their scarlet colours to the hybrids. This promised well in the first generation, but in after crossings the Sophronitis crosses have been largely merged in the class of Laelio-Cattleyas without scarlet tints, and in the Cochlioda Noezliana hybrids crossing them with Odontoglossum again has resulted in many cases in indifferent Odontoglossums. It would be well to try re-crossing again with Sophronitis and Cochlioda some of those which possess good shape and large size, in order to obtain the scarlet colour again, and it would be well to pursue similar methods with other hybrids that have given results different from the original objective. Steadily but slowly Orchidists are learning more about the probability of crosses in respect to the influence of certain parents and colour production.

It is known that certain well-marked species with desirable qualities transmit their features to succeeding generations. Odontoglossum Pescatorei, which possesses fine shape and a specially broad labellum, if only used once as a breeder, can be traced for many generations in the progeny. Odontoglossum Harryanum asserts its firm substance and peculiar form of markings; Odontoglossum crispum has played an important part in hybrid Odontoglossums, and, through a fine form of O. Wilckeanum, was one of the chief factors in a famous Continental strain.

Cattleya Warneri in any strain gives large size and good shape; Cattleya Gaskelliana is valuable for hybridising; whilst Cattleya Dowiana aurea, the most largely used of all Cattleyas for breeding, has an influence in giving size and colour variation. The past year has brought us many fine yellow-petalled Laelio-Cattleyas, the desired colour being now frequently obtained in the outer segments of the flower, and with the curious result that in yellow-petalled flowers with parents having coloured labellums, the labellums of the resultant hybrids are in some cases much darker than those of either of the parents. On the contrary, certain crosses known to produce frequently white-petalled hybrids invariably also have the labellums toned to a much lighter shade than the parents. Cyanic colours appear to be easily extinguished in certain combinations. These colours appear to be largely floral surface tones, and may be extracted by immersion in water.

Reverting to the list of registered hybrids, some of the crosses should not have been made, as the parents used were too closely allied. Some, again, in the first flowers raised, did not come up to expectation, but it is probable that a large proportion will, on development, prove worthy garden plants, especially as crosses which sometimes do not appear sufficiently distinct often flower at a different time from those they resemble. This is one of the great benefits of Orchid hybridising, for raisers have succeeded not only in giving new and richer colours to their hybrids, but in producing plants that will flower in succession throughout the whole year. It needs a careful selection of parents to avoid those with defective characters in the flowers, for the defects may be handed on as readily as good features; for example, useful as it has been, Laelia purpurata transmits its defective petals for several crossings.

The raising of fine species true from seeds is a field which might be more exploited than it has been up to the present. In the matter of the perpetuation of pure species, of which only a single specimen or a very small number may have been imported, there is a danger that the species may be lost to cultivation, only to be obtained again by chance importation. The raisers of seedling Orchids would do a very desirable work in raising true from seeds small batches of such plants for distribution, a work which might be done in botanic gardens. It will be many years before species of Orchids can be imported as formerly, and home-raising should be practised.

NEW HYBRID ORCHIDS

(Continued from November 24, p. 306.)

Hybrid.	Parentage.	Exhibitor.
Brasso-Laelio-Cattleya Antoinette	C. Portia coerulea × B.-L. Helen	Sir J. Colman.
Brasso-Laelio-Cattleya Anzac var. Vesuvius	B. L. C. Marathon × L.-C. Dominiana	Charlesworth and Co.
Brasso-Laelio-Cattleya Lady Manningham-Buller	B.-C. Digbyano Mossiæ var. Queen Alexandra × L.-C. Ophir	Armstrong and Brown.
Cattleya Achine	Maggie Raphael alba × labiata alba	W. H. St. Quintin, Esq.
Cattleya Adula Dorman	Dormaniana × Adula	Sir J. Colman.
Cattleya Labiatana	labiata × Percivaliana	Duke of Marlborough.
Cattleya Mrs. James Watson	Maggie Raphael alba × Trianæ The Queen	Messrs. Sanders.
Cypripedium Hallwolmer	insigne Harefield Hall × Lord Wolmer	Duke of Marlborough.
Cypripedium Hippolyta	Dante × Hera Euryades	Messrs. Sanders.
Cypripedium John Hartley	Reginald Young × Shogun	John Hartley, Esq.
Cypripedium Mauviridi	Mandine × viridissimum	Duke of Marlborough.
Cypripedium Miss Ruth Bonsall	Actæus Drewett's var. × Miss A. Audrey Locke	Fred J. Hanbury, Esq.
Cypripedium Polinx	Earl of Tankerville × Mr. F. Sander	G. Hamilton Smith, Esq.
Cypripedium Vega	Germaine Opitz × Priam	G. Hamilton Smith, Esq.
Laelio-Cattleya Alecto	L.-C. Ingramii × C. Fabia alba	W. H. St. Quintin, Esq.
Laelio-Cattleya Argo	C. Bowringiana × L.-C. Geo. Woodhams	Baron R. Schröder
Laelio-Cattleya Diana var. Buttercup	Ophir × Jacobus	Armstrong and Brown.
Laelio-Cattleya Empheno	L. C. Prince Leopold × C. Dowiana aurea	W. H. St. Quintin, Esq.
Laelio-Cattleya Haroldensis	Haroldiana × Epicasta	Sir J. Colman.
Laelio-Cattleya Lydaurea	L.-C. Lydia × C. Dowiana aurea	Fred J. Hanbury, Esq.
Laelio-Cattleya Mrs. R. P. Murray	L. pumila × exoniensis × L.-C. Issy	Fred J. Hanbury, Esq.
Laelio-Cattleya Perciclive	C. Percivaliana × L.-C. Clive	Duke of Marlborough.
Laelio-Cattleya Schröderae	L.-C. Bella alba × C. Maggie Raphael alba	Baron R. Schröder.
Laelio-Cattleya Selene	L. C. Fascinator × C. Trianæ	Charlesworth and Co.
Odontioda Hypatia	Odm. ardentissimum × Oda. Diana	Charlesworth and Co.
Odontoglossum General Allenby	crispum nigrescens × hybrid	Flory and Black
Odontoglossum xanthinum	ardentissimum xanthotes × luteo-purpureum Vuylsekeanum	Charlesworth and Co.
Sophro-Cattleya Doreas	S.-C. Dora × C. Dowiana aurea	E. H. Davidson and Co.
Sophro-Laelio-Cattleya L. McKenna	S.-L.-C. Oedipus × C. Dowiana aurea	E. H. Davidson and Co.

TREES AND SHRUBS.

TURKEY OAK AS A PLANTATION TREE

THE good account given by Sir Herbert Maxwell on p. 218 of Quercus cerris is encouraging to intending planters. As a plantation tree it is very rapid in growth, producing clean, straight boles when the side branches are suppressed. It is unfortunate if the timber has been proved unsuitable for outside purposes. It is surprising to learn that Quercus cerris is subject to no disease, although it seems doubtful if it will prove a long liver. I notice here one or two trees starting to die from the top, much after the manner in which Elms often go. Perhaps this Oak needs a lighter soil than the native species; the trees in question are growing on a strong, heavy soil, such as that in which the English Oak often thrives well. Self-sown plants are frequent here. *T. H. Bolas, Mount Stewart, Co. Down.*

BULB GARDEN.

ALBUCA NELSONII.

A POT of bulbs of this species flowered this summer at Holland House, Kensington. It is the finest of the known species of Albuca, and comparable to Galtonia princeps, to which it is closely related. The scapes are not so tall as they could be if the bulbs were of full size, but each bears a raceme of ten to twelve large white flowers, with a dull red stripe down the back of each segment. The bulbs came direct from Nelson, New Zealand, and the name is suggestive, but the species was named after Mr. Nelson, of Broadway, who discovered it in Natal, introduced it to this country and flowered it in 1880. It is a stately plant, carrying its flowers erect, not pendent, as in Galtonia; it belongs to a group including several strong-growing species, and is most nearly allied to A. altissima. It does not require a high temperature under glass to develop in full beauty. There is a full-sized figure of a leaf and flower spike in the *Gardeners' Chronicle* for August 14, 1880, p. 199. *J. F.*

AUTUMN CROCUSES.

"FORMAKIN" (Vol. LXII., p. 212) is unfortunate in having his Autumn Crocuses destroyed by mice and rats. When I observe any signs of mice or rats having attacked my Crocuses, I put a little of Harrison's rat poison on the spot, without any bait whatever, and the mice and rats never return after tasting the poison. This poison is said to be harmless to larger creatures. I think there is less danger of birds or other creatures touching the poison when there is no bread or other bait. *S. Arnott.*

THE DEFERTILISATION OF FLOWERS BY INSECTS.

ALTHOUGH volumes have been written upon the fertilisation of flowers by insects, I do not remember to have seen any statement that insects sometimes cause the defertilisation of flowers by depollinating them.

In June, 1911, I received from South Africa a living plant of Euphorbia gorgonis, Berger, which is one of the succulent species. This plant flowered freely in August of the same year, and I pollinated the stigmas of many of the female flowers with pollen from different parts of the same plant, but no fruit resulted. I was not at all surprised at this result, because I was well aware that many (possibly most) of these succulent species are not fertile to pollen taken from the same plant.

In 1912 the Royal Botanic Gardens, Kew, also became possessed of a plant of the same species, and as my plant and the Kew plant were in flower at the same time I pollinated several stigmas of female flowers that were in a receptive condition upon my plant with pollen taken from the Kew plant, and some of those on the Kew specimen with pollen from mine. The operation was performed with the aid of a pocket lens, so as to make sure that the stigmas were properly dusted with pollen, which I clearly saw adhering to the stigmas. I marked the flowers on my plant that I had pollinated, and the next day examined them with a strong lens to see if I could discover any trace of pollen-tubes. But I could not find the slightest trace of pollen on any of the stigmas. I could only surmise that it might possibly have become deliquescent under the action of the stigmatic juices. No fruit was produced upon my plant. It was only in September last that what I believe to be the right solution was arrived at.

Happening to be looking for a flower of the scarlet Pelargonium that had pollen upon its anthers, for examination under a microscope (it makes a lovely object when properly illuminated), I had found one with two of its anthers covered with pollen, and was wondering why so many of the flowers were destitute of pollen and why only two anthers of this particular flower bore pollen. I also remembered that on some previous occasions I had found Pelargonium flowers destitute of pollen and had thought that their barrenness was due to the effect of hybridisation, when the reason was made plain to me by a fly (one of the pollen-eating Syrphidae) settling upon the Pelargonium-flower. Either it had visited the flower before and knew its details, or it could see at some distance which side of the flower the pollen-bearing anthers were on, for it settled directly by them, and during its stay upon that flower made no attempt whatever to go to the other anthers, which were destitute of pollen. The fly very considerately allowed me to watch its actions with a lens of short focus, so that I could see it rapidly picking up the pollen, and very soon it had cleared every grain off both anthers as clean as if it had never contained any pollen at all. Whilst I was watching the fly eating the pollen from the anthers I noticed that the stigmas of that flower were well dusted with pollen. The fly also perceived that they were pollinated, for as soon as it had finished with the anthers and cleansed its feet of pollen it turned its attention to the stigmas and very soon had picked off every grain of pollen from their surface, thus depollinating the flower and destroying its chance of being fertilised. Having witnessed this, I can now give a shrewd guess as to what happened to the pollen I placed upon the stigma of Euphorbia gorgonis in 1912!

The flies belonging to the family of Syrphidae, I believe, feed largely upon pollen, and doubtless often prevent flowers from being fertilised by eating the pollen that may be upon their stigmas. *N. E. Brown.*

The Week's Work.

THE FLOWER GARDEN.

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

CLIMBERS.—It cannot have escaped notice how climbers and shrubs in general trained to walls become in the course of years a tangle of worthless shoots, frequently intermixed with dead wood. Neglected plants should be cut down close to the ground. Some of them refill their places almost immediately, subsequent to renewal of growth, of which Polygonum baldschuanicum, Piptanthus nepalensis, Menispermum canadense, Vitis Coignetiae, and Buddleia variabilis may be mentioned as examples. Early flowering climbers, such as Forsythia suspensa and Garrya elliptica should be left at present, but the others and many more may be pruned as advised at once. The young shoots for training should be chosen at an early stage of growth, and tied before they become bent, or liable to break.

SURFACE-DRESSING OF VIOLETS.—In many gardens Violets have been neglected, inasmuch as old plantations have not been destroyed and new ones made. A dressing of old potting soil, or the surfacing material of vine borders spread among the plants, will mitigate considerably loss from the above neglect. It does no harm to partly cover the leaves with the topdressing material, for the first heavy rain will wash it off again. Plants of Lily-of-the-Valley may also be given a dressing of similar material, to be followed later by applications of soot, poultry manure, or superphosphate.

THE ROCKERY.—All Alpine plants should be given the usual winter attention, including cleaning, topdressing, the restriction of too robust growers, removal of weeds, stirring of surfaces, rearrangement of stones, and finally an application of light soil sifted to make it suitable to sprinkle among the fine-leaved plants.

HOLLYHOCKS.—Plants of Hollyhock raised from seed sown last autumn should have timely attention in potting, so that the seedlings suffer no check to growth. Give ample pot-room if strong plants are expected to be ready to plant out in April. They should be grown in a temperature of 55° to 60° to induce a rapid growth. There is still time to sow seeds for the present year's flowering in the warmer parts of the country.

SHRUBBERIES.—There may be shrubberies still to clean, and dead wood to cut out of overgrown shrubs as well as shoots to shorten here and there, work which may be done in weather unfit for the carrying out of other operations, and, indeed, one feels that the only reasonable excuse for the upkeep of flower gardens and pleasure grounds in these times is that so very much of the work involved may be done in bad weather.

RELIEVING LABOUR.—Much labour may be saved by laying down beds and borders to grass. By this means I have reduced labour considerably, and still have more beds to put under the lawn mower. It need not be more than a temporary measure to allow for more important work to receive due attention.

WALL ROSES.—Those that need pruning may be pruned at once. The object is to get bloom earlier than if the work were delayed till March, and the best results are obtained from Roses trained on the walls of dwelling-houses and hot houses.

FRAMES.—Beds of cuttings should be examined, and where low, green growth has gained a footing in the surface soil it must be removed and a thin layer of sand sprinkled among the plants. If previously heated, no growth will appear again. Pentstemons and other plants that are rooted should be freely ventilated in suitable weather. The frames may be taken away from Violas and other hardy plants.

THE ORCHID HOUSES.

By J. COLLIER, Gardener to Sir JEREMIAH COLMAN, Bart., Gatton Park, Reigate.

SEASONABLE WORK.—The season for general repotting operations is approaching, and the necessary potting materials should be procured. In recent years Osmunda fibre has been used as a potting medium for most kinds of Orchids with good results, but at the present time it is almost unprocurable, so that a substitute has to be found. Many growers have used A 1 fibre with good results. I have obtained the best success with this material by thoroughly scalding it before cutting it into short lengths, adding an equal proportion of half-decayed Oak leaves that have been rubbed through a rather fine sieve, and a liberal amount of crushed crocks and chopped Sphagnum moss. Treated in this way A 1 fibre forms an economic, pliable, and porous compost. There is no better implement for cutting the fibre than an old chaff cutting machine with one knife removed; where only a small amount is used a pair of ordinary sheep shears will answer the purpose. By the end of the present month the cleansing of the houses should be finished. Each plant should be examined for insect pests, the receptacles washed, and the labels rewritten if necessary.

TEMPERATURES.—During the past season we have employed less fire-heat at Gatton in the warm houses than usual, and the plants seem to have benefited by the treatment. Lath blinds have been drawn over the roof-glass during cold nights, and the atmosphere of the houses kept drier. The night temperatures have been maintained as nearly as possible as follows:—The East Indian or hottest house 60°; Cattleya house 55° to 58°; cool house 50°, with a rise of about 5° in each division during the day. The temperatures have been even lower during very cold nights.

VENTILATING.—The ventilation of the respective houses needs very careful attention at this season of the year. Fresh air in moderation is essential to the well-being of Orchids: a stagnant atmosphere is doubtless one of the principal causes of spot and other diseases in Orchids. Draughts, however, must be rigorously prevented. The bottom ventilators should be opened on the leeward side of the house on all favourable occasions, in volume in accordance with the weather conditions.

WATERING.—The application of water at the roots at this particular season also needs very careful attention. Plants at rest should be given only sufficient moisture to prevent shrivelling, whilst those that are growing actively should be allowed to become dry at the roots before water is again applied.

PLANTS UNDER GLASS.

By E. HARRISS, Gardener to Lady WANTAGE, Lockinge Park, Berkshire.

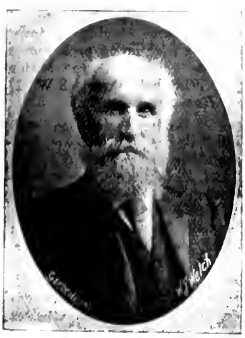
MANAGEMENT OF THE HOUSES.—By the careful use of water, both in regard to watering the plants and the damping down of the houses it is possible to keep the temperatures in all the houses much lower than is generally recommended in normal times. The inmates of the plant stove will not suffer in the least in a temperature of 55° on very cold nights, provided the atmosphere is not overcharged with moisture. The watering of all plants should be done before noon, and it will be safest to err on the dry side rather than over-water the roots. Air should be admitted to the plants by opening the top ventilators a little during the warmest part of the day. The temperature of the houses containing greenhouse plants may go down to 50° or even lower on cold nights. If blinds are attached to the roofs of the houses they should be lowered when severe frost is imminent.

THE FORCING HOUSE. Batches of the various forcing shrubs should be placed in a warm house at regular intervals. It will hasten the process of growth if the plants are syringed with water warmed to a temperature of about 80°. Batches of forcing bulbs may be placed in heat as required. Narcissi which are well rooted may be brought on slowly in any of the cooler houses, and introduced into more heat as required. Lily of the Valley crowns may be dug up in clumps from the permanent beds and placed on a hot bed in a heated pit. Cover them with a little moist sifted soil, and water with warm water. Keep the glass covered with mats or litter till the spikes are about 4 or 5 inches high, then gradually inure them to the light. Water must be given when required, or the flowers will flag.

THE HARDY FRUIT GARDEN

By JAS. HUDSON, Head Gardener at Gunnersbury House, Acton, W.

FRUIT TREES IN SHRUBBERIES.—In existing conditions the experiment may well be tried of planting standard Apples and Pears in shrubberies. These are not only productive of food, but have at the same time a decidedly ornamental effect. The same may be said of standard Plums, Damsons and Cherries. The aim of the gardener should be at present to produce the maximum quantity of fruit from any given space. However carefully trained trees may appear when denuded of their foliage, if these do not result in good crops the object is not attained. Any vacant wall space should be utilised. It matters not what the aspect may be, some kind of fruit may be chosen for every site, and the roofs of sheds may be covered with fruit trees as well as the sides. If new trees be planted by the middle of March no harm will ensue. Fruit pergolas are not so general as they might be; I have seen many a garden where this feature might be advantageously added, especially in windy or exposed situations.



THE FRUIT ROOM.—In frosty weather care will be needed to see that the fruit-room does not drop in temperature too near to freezing-point: 35° F. should be considered the minimum. The flavour of Pears will be affected by a lower temperature than 40°. I do not advise artificial warmth if it can be avoided. Well-protected sides, double doors, and shuttered windows, will keep out a great deal of frost; failing shutters, protect the windows with mats or sacking. Probably the ideal fruit-room is one which is sunk below the ground, or one that is excavated in the side of a hill. Take advantage of vacant shelves by thinning out the late varieties. Do not let the fruits touch each other if it can be prevented. Be careful in the handling, and take up each fruit separately, so as not to mark it. Take note as to which varieties are keeping best, and reserve these for the latest use. Make a note of them, so as to extend their cultivation either by planting fresh trees or by double grafting. For this latter purpose secure enough good shoots from the prunings for the purpose, and well bed them in moist soil or ashes until the time for grafting arrives. It will now be more essential than ever to take every precaution when packing dessert Pears and Apples, so that no injury is done to them in transit. Forward late Pears towards the ripening stage by placing them in a temperature of from 55° to 60° F.

THE KITCHEN GARDEN.

By J. [illegible], Gardener to the Hon. [illegible] SPENCER [illegible], M.P., Wormleighton, Southam.

FORCING ASPARAGUS. No vegetable is more appreciated than Asparagus, and it is one of the easiest to force. Forcing of late crowns is the only method of forcing early Asparagus during the winter. Any heated pit containing a good lasting bottom of leaves should be composed chiefly of leaves, and covered with about six inches of soil, will answer the purpose. Place the roots closely together and force them in a temperature of 55° to 60°; the lower the temperature in reason the better will be the "grass." To provide the necessary roots the plants may be lifted from an old bed or two, and preparations must be made to have fresh beds to take their places.

THE SEED ORDER. The seed catalogues are being received from the various firms, and the order for such as are required should be dispatched in good time, as all business staffs are depleted, and those who delay sending may receive their seeds very late. Novelties in vegetables appear each season in most seedsmen's catalogues, and a few of the more promising new varieties should be given a trial in small quantities.

GENERAL REMARKS.—The weather during the past month has not been favourable for preparing the ground for next year's crops. Continued falls of snow and rain have made the carting and wheeling of manure on the ground an almost impossible task. Advantage should be taken of every frosty morning to push this work forward using all available labour for the time being. Ground that is to be trenched this spring should be spread with manure and other fertilising materials, such as burnt refuse and soil from old hot beds. This work may be done during frosty weather, but on no account when the ground is covered with snow. Previous arrangements having been completed for the rotation of crops, the ground should be heavily or lightly dressed with manure, according to the requirements of the individual crop. Ground intended for Onions, if not already prepared, should be attended to at once. Select an open situation and dress the soil liberally with manure. Dig deeply, and as soon as convenient, to allow as much time as possible for the soil to become well pulverised before sowing time arrives.

FRUITS UNDER GLASS.

By W. J. GOSS, Gardener to Mrs. DEMPSTER, Keele Hall, Newcastle, Staffordshire.

STRAWBERRIES.—Where a pit is available it may be utilised for the first batch of Strawberry plants, and, if filled with leaves, will provide sufficient warmth to promote root action. Before arranging the plants they should be looked over, all dead and decaying leaves removed, and the surface top-dressed with a loamy compost containing a little fertiliser and soot. Air should be freely admitted; very little water will be required till the plants are making fresh foliage, when it must be given more frequently, always with the chill off. Directly the flower spikes appear remove the plants to a shelf in an early Peach house, where the temperature does not exceed 55°. Spray the foliage with tepid water during bright weather. Where the plants are placed in houses from outside, a temperature of 45° will be sufficient until the flower spikes appear.

FORCING.—The scarcity of fuel, coupled with the difficulty of obtaining labour, makes it necessary to curtail the forcing of fruits. Cleaning should be completed by thoroughly washing every portion of woodwork and glass with carbolic soap. Fresh lime should always be used to limewash the walls where red spider has been troublesome. The pruning and cleansing of the trees should be pushed forward. It is essential that Peach trees should be pruned and trained before the buds are further advanced. The growths should be thinned out so as to leave only sufficient shoots to lay in at 4 inches apart. Remove the old top-dressings from the borders and replace with a fresh compost. The water pipes are much improved in appearance by a coating of lamp-black. See that all valves and boilers are in working order.

LATE VINERIES.—By this time the latest Grapes should be cut. Place the bunches in bottles in a dry room where the temperature is even and low. Lady Downe's and Black Alicante will retain their appearance for a considerable time in such a structure. A few pieces of charcoal placed in the bottles will keep the water sweet. The vineries will then be ready for cleansing operations. Pruning may be carried out immediately afterwards. Do not prune old vines too closely, but only to the best round, plump bud at the base, which in most cases contains an embryo inflorescence. Thoroughly wash the rods with an insecticide, and remove all loose bark. Examine the borders for young surface roots, and should these be absent or in an indifferent condition, remove the soil down to the main roots, and replace with fresh chopped turfy loam. Cover the rougher material with a few inches of a finer compost, and finish off with a dressing of short manure. All borders, if at all dry, should be thoroughly soaked with clear water, and the houses kept cold and freely ventilated until required for starting.

EDITORIAL NOTICE.

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.*

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

Special Notice to Correspondents. — *The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.*

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

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.*

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 38.0.

ACTUAL TEMPERATURE:—*Gardeners' Chronicle* Office, 41, Wellington Street, Covent Garden, London, *Thursday*, January 3, 10 a.m.: Bar. 30; temp. 35.5°. Weather—Fine.

A National Rose Garden for America.

The American Rose Society Test Garden Committee has recently issued a pamphlet describing the National Rose Test Garden proposed to be established under the direction of the Bureau of Parks of the City of Portland, Oregon, and under the auspices of the Portland National Rose Test Garden Association. The pamphlet states that this garden has been officially designated by the American Rose Society as the testing ground of that Society for the Pacific North-West, and that all awards made in connection with the garden will be recognised by the American Rose Society.

When fully developed the garden will cover 7 acres or more, as the Bureau of Parks has arranged for an expanding policy, and in choosing the site all conditions which enter into the successful cultivation of the Rose have been duly considered. The position decided upon, though within 15 minutes of the business centre of the city, commands a view of the city itself, the rivers, and a wonderful panorama of the Cascade Mountains, with their peaks, covered with eternal snow, some 60 to 80 miles distant; while the terraces on which the garden is to lie are situated in a natural amphitheatre of hills with an exposure ranging from north-east to south-west, thus receiving protection from winds.

The American Rose Society is youthful and vigorous, and has the advantage of being able to draw on the experience of the older societies of England and France and to adopt and develop the enterprise of each. From the former it has taken the idea of a Rose Annual, the first number of which we welcomed last year, while from the French Society, it has doubtless taken into consideration the well-known Rose trials at Bagatelle, and proceeded to the enterprise we are noticing.

In one respect, the method of making awards proposed by the American Society must be considered a great advance on the methods adopted in Europe. Both the English and French awards to new Roses are made to flowers or plants considered by the judges to be of sufficient merit, irrespective of their competitors. The comparison the judge has to make is not between two exhibits before his eyes, but between the plant or flower he is inspecting and some ideal in his own mind. It is small wonder that so faulty a system leads to criticism, and that the value of the awards so made has come to be regarded as unsubstantial and ephemeral.

It is greatly to the credit of the American Society that it has had the courage to abandon this system, and strike out a line of its own.

The Roses to be tested are to be entered in one or more of five sections, and first and second prizes are to be awarded to the best Roses in each section. Thus the comparison to be made by the judges is between plants actually before their eyes, and we may feel some confidence that the results will prove of practical value.

The difference between the two systems is not unlike that between the syllogistic idealism of Plato and the new philosophy of Francis Bacon, between the flower and the fruit, between barren learning and practical utility, the logic of the schoolmen and the advance of science. The American awards will have a definite value. It is what we might expect from so practical a nation, and makes for the useful development of the Rose.

All Roses submitted are intended to be tested in threes. One will be placed in the natural soil of the garden, treated only with manure, and another in soil specially treated with commercial fertiliser. In both these cases the plants are to be sprayed and treated in every manner necessary to resist mildew, black spot, and other diseases, and they will also be carefully protected from insect pests. The third plant in each case will be given ordinary garden cultivation, but will be unsprayed, the tests in this section being designed solely to ascertain the disease-resisting qualities of the plant. This section of the garden is to be sufficiently far removed from the other sections to prevent contamination of those plants which are being tested for other qualities.

In forming the prize list, the only differentiation at present adopted is between climbing and non-climbing varieties. Thus the first section is general, the second section for the best non-climbing Rose, the third for the best climber, the fourth for the best Rose raised by an amateur, and the fifth for Roses of local origin. If the enterprise succeeds, we may hope in future years to see this differentiation carried a step further, and classes developed for exhibition and decorative flowers, Polyantha, Pompon, and other sections, and thus there may gradually grow up a classification of Roses simply for garden purposes, capable of taking its place side by side with the existing system of classification.

Roses are allowed by the regulations to be entered under names or numbers. While this in itself may not be unreasonable, it is much to be hoped that a further regulation may be added requiring every successful competitor to give to his plant, if exhibited under a number, a proper name before it is eligible to receive an award, and thus to avoid the uninteresting experience annually awaiting the visitor to our Daffodil shows, where beautiful flowers are staged under numbers only, which it soon becomes impracticable to remember or to notice.

When Roses are entered for trial at Bagatelle there is a useful rule, though perhaps not sufficiently strictly enforced, requiring the parentage to be stated, a feature which adds to the interest of the trials. The American Society appears to have made no provision to this effect, and it may be worth consideration whether in subsequent tests the omission should not be made good.

These, however, are points of minor importance, and do not detract from the pleasure with which we welcome this new enterprise of American Rose-growers.

OUR ALMANAC.—The *Gardeners' Chronicle* Almanac will be published as a supplement to the issue for next week.

HORTICULTURAL CLUB.—The difficulty respecting the provision of fresh headquarters for the Horticultural Club since the Hotel Windsor was taken over by the Government has been met by an arrangement recently concluded with the Farmers' Club, whose rooms are at 2, Whitehall Court, S.W. I. By this arrangement members of the Horticultural Club may use the rooms of the Farmers' Club freely and with all privileges. Whitehall Court is situated exactly at the rear of the War Office, which is almost opposite the Horse Guards, so the rooms are easily reached from Victoria Street, Westminster. The Club premises are on the second floor, and this is reached by means of a lift which will be found on the right upon entering 2, Whitehall Court. Refreshments can be ordered in the Club rooms, and there are luncheon and dining rooms in the building, so that Whitehall Court has all the advantages of a first-class hotel. Members staying in town for a night or more and wishing to book rooms should address their enquiries to Major HORNSBY, Manager, Whitehall Court, S.W. 1. *R. Hooper Pearson, Hon. Sec.*

SIR DANIEL HALL.—Horticulturists as well as agriculturists will welcome with pleasure and satisfaction the announcement that a K.C.B. has been conferred on Mr. A. D. HALL, Secretary to the Board of Agriculture. Sir DANIEL HALL has had a long and distinguished connection with agriculture, at Wye and Rothamsted, and as a Development Commissioner. One of the most versatile of men, he possesses the secret of combining thoroughness with variety of knowledge. Although professionally and whole-heartedly devoted to agriculture, Sir DANIEL has nevertheless found time to become an expert horticulturist, and there is probably no amateur living who can rival him in his knowledge of Tulips. His work on the soil is a masterly book—one of the few text-books in the language which it is a pleasure

as well as a profit to the grower. *Pilgrimage of British Farming* shows the same qualities of grace and power.

CARNATION MARION WILSON (see fig. 6).—The Perpetual flowering Carnation Marion Wilson is a distinct variety which is likely to find favour with growers of this type. The flower measures nearly 3½ inches across. In addition to large size it is possessed of stout substance. The form is not so regular as in some sorts, but perfect symmetry is not so desirable a quality for the florist's purpose as boldness and a striking colour, so that for market purposes the variety will doubtless become popular. The general tone is pale yellow, with a few vermilion markings here and there on the petals. Plants grown out of doors have flowered freely, and the foliage is not browned by the sun, as sometimes happens in the case of other yellow Carnations of the same type. Cut blooms were shown at the R.H.S. meeting on December 4 when the Floral Committee gave the variety an Award of Merit and these lasted fresh for nearly a fortnight.

PROFESSOR HUGO DE VRIES.—On February 16 of the present year Dr. Hugo de Vries will have completed his 70th year, and will, in accordance with Dutch law, retire from his professorship in the University of Amsterdam. Recognising the great and distinguished services which DE VRIES has rendered to botanical science, and particularly to the science of plant breeding, his colleagues in Holland have decided to publish in book form in his honour the collected essays of DE VRIES. Recognising that his work is known and valued in all parts of the world, the Dutch committee formed to carry out this project invite subscriptions from all parts of the world. The contemplated work will consist of six volumes, each of 550 pages, and the publication will extend over three years. The subscription, of 45 florins, may be paid in three annual instalments, and should be sent to the secretary, Prof. Dr. Th. H. Stomps, Weesperzijde 23, Amsterdam.

MOLES.—Among the minor effects of the war are the increase in numbers of such animals as rabbits and moles. The multiplication of the numbers of moles is likely to have curious consequences, for moles are voracious feeders. According to observations made by Miss FRANCIS PITT, and recorded in the *Scottish Naturalist* for September, a mole will eat its own weight of earthworms in 24 hours. A mole weighing 4 ozs. kept in captivity by Miss PITT ate in one month 7½ lbs. of earthworms.

BEQUEST TO A GARDENER.—It is reported that Mrs. S. A. PATTISON, of Knightsbridge, London, lately deceased, left a thousand pounds to her former gardener, Mr. JAMES NORRIS.

BRITISH ROSE GAINS AN AWARD IN AMERICA.—Messrs. DOBBIE AND CO. have been awarded a Silver Medal and Diploma for a new Rose sent for trial to the Panama Pacific Exposition, San Francisco, 1915. The Executive reserved the right to name all seedlings that obtained awards, and it has named Messrs. Dobbie's variety the Thomson Rose. In forwarding the Diploma, the British Embassy at Washington states that the delay in making the announcement is due to the fact that the authorities concerned had hitherto feared to send the Diplomas, etc., across the Atlantic for fear they might be destroyed, and that it would be impossible to replace them. The Thomson Rose is an improved Mrs. F. Straker, and is very floriferous. It will probably be put into commerce in the autumn of 1919.

HORTICULTURE IN AMERICA.—An old correspondent of the *Gardeners' Chronicle*, referring to the influence of the war on gardening in America, writes us as follows: "The coming year may be hard on horticulture in America. We are feeling certain effects at this time, due to decreased importations. The Dutch bulb situation is very disconcerting, but I feel that the total result will be to the great benefit of American horticulture. Hitherto the trade has lagged behind the demand, preferring to sell only those things which could be bought in Europe at a price lower than they could be propagated in America. The result has often been the distribution of quantities of material that did not actually fit the climate of America, where the greatest amount of gardening was done. You can interchange the European material with the Pacific Coast but not generally with the East. So, I think that the ultimate result will be to the benefit of American gardens, because they will have to develop their own materials and rely on their supplies more on the things that actually fit."

FIG. 6.—CARNATION MARION WILSON: COLOUR YELLOW, WITH VERMILION STRIPES.

THE MARKETING OF CUT FLOWERS.—An interesting article on the treatment of cut flowers for marketing was read by Mr. WM. COLLIER at the 20th annual convention of the Canadian Horticultural Association at Montreal. The great attention paid by North American florists to the preparation of cut flowers for the market is no doubt in part due to the long distances over which the blooms have to be carried; nevertheless the fact that the care bestowed on the flowers is apparently repaid by results indicates that it should be worth the while of florists in this country to try similar methods. American Rose growers, for example, regulate the daily cutting of blooms according to weather conditions, and make a strong point of transferring the blossoms without delay to "coolers" or refrigerators kept at a temperature of from 38°-40°. The object is to "harden" the blossoms, and to secure the accomplishment of this object the cut flowers are left for 12—or, in the case of Roses, preferably 24 hours—in the cooling chamber, after which the blossoms are graded. Chrysanthemums, Lilies, and other cut flowers are treated in a similar manner, but in the case of Carnations some growers prefer to harden the blossoms in a temperature somewhat higher than that to which Roses are exposed. Mr. COLLIER holds the view that even those growers who have markets near at hand will find it pay to harden off their cut flowers before marketing them, for the superior lasting qualities of blossoms so

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WAR ITEM.—Private J. HUMBLE, formerly employed in the gardens of Stourton Hall, Kinver, Staffordshire, has been killed in action. He was the youngest of six brothers serving with the Colours.

MR. R. A. ROLFE AND THE "ORCHID REVIEW."—The receipt of the issue of the *Orchid Review* for November-December, 1917, reminds us that it completes the 25th volume of this useful periodical. Some four older readers

will remember the circumstances which prevailed at the time of its promotion. REICHENBACH had left instructions that his herbarium in Berlin was not to be opened until twenty-five years after his death. He had for many years occupied the position of botanical botanist for Orchids, and to him English and Continental cultivators had sent their specimens with a view to the spread of accurate knowledge concerning classification. On REICHENBACH's death in 1889, disappointment regarding the locked-up treasures of his herbarium was general. We ourselves wrote: "It would be affectation to pretend that we did not receive the announcement we have to make with chagrin and sorrow. The task of Orchidists in this country is by this action rendered peculiarly laborious and perplexing." For a period there was some doubt as to who would take up the work which had ceased with REICHENBACH's death, but eventually by the devotion of Mr. R. A. ROLFE to the study of Orchids at Kew, and later by the establishment of the *Orchid Review*, all was done that was possible to help forward the cultivation of Orchids in this country, and to maintain the interest of those engaged in raising new hybrids. It is only those most intimately associated with the Editor and the plants treated upon in his journal, who know the difficulties he had to overcome for some years. Indeed, throughout the whole period the task of keeping the *Review* up to the high level it attained has been considerable. At the present time, when the mind and energies of the nation are mainly directed to other matters than Orchid cultivation, this pursuit does not loom so largely as it has done in past years. But collections must be maintained, even in such a period as that through which we are now passing, for the named hybrids and the many thousands of as yet unnamed seedlings represent a sum of energy which must not be wastefully thrown away. It is satisfactory, therefore, to know that in spite of the difficulties connected with the printing of journals, the *Orchid Review* is to be continued, and we hope that with the resumption of peace it will enter upon a period of increased success.

NOTES FROM AMERICAN JOURNALS.

INVENTORY OF IMPORTED SEEDS AND PLANTS.

In his preface to the Inventory of seeds and plants imported into the United States during the period from January 1 to March 31, 1914, Mr. David Fairchild draws attention to a number of interesting and promising plants. Among the former is the Kerruelen Cabbage, Pringlea antiscorbutica—familiar, at all events by name, to readers of Darwin's *Voyage of the Beagle*. It is a low sprawling plant, bearing heads of leaves sometimes 18 inches across, and with a dense white heart with a taste like Mustard and Cress.

Phaseolus aureus is a Chinese Bean from which the Chinese produce a starch said to be superior to that yielded by either Maize or Wheat.

The several varieties of Flax from Addis Ababa, Abyssinia, should be of interest to Flax growers of this country, particularly at the present time when there is need for a considerable extension of the area under this crop.

LIMESTONE.

According to experiments made by Mr. N. Kortlieff at Rutgers College, New Jersey, the value of ground limestone increases with the degree of fineness to which it is ground. Ground so finely as to pass through sieves with 200 meshes to the inch limestone is said in its soil effects to burn lime.

HOME CORRESPONDENCE.

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

CUPRESSUS FORMOSENSIS. Mr. H. White, Sunningdale Nurseries, Windlesham, has sent me two nice plants of this species, which he raised from seeds received from F. R. S. Balfour, Esq. Mr. White tells me that though the thermometer in the Sunningdale nurseries went down to zero twice during last winter, C. formosensis was not injured. I must therefore suppose that the death of my own plant, recently recorded in the *Gardeners' Chronicle*, was due to soil rather than climatic conditions, as the Giant Cypress of Formosa has proved hardy also at Monreith, where I saw it recently.—*H. J. Elwes.*

SUGAR FROM SUGAR BEET.—I grew last season a small quantity of Sugar Beet in these gardens, and the cook succeeded in making syrup and sugar, both of which are good. She has given me the recipe and particulars, which are as follow:—Boil the Sugar Beet as in the case of ordinary Beet. When cold, peel the roots and cut them into slices; put into a pan, and cover with clean cold water. Place the pan on the stove, and let the contents simmer for ten hours. Strain, and afterwards boil the liquid down, from about one gallon to half a pint. This will give syrup. For sugar, boil down still and when cold pound the mass in a mortar.—*W. Fisher, Effects Gardens, Killarney.*

GROUND OPERATIONS.—Mr. C. Davis quotes me (p. 262, Vol. LXII., to give my experience on the subject of digging. In my opinion the right method is to trench all light ground, so far as is possible, during the autumn, but land of a very heavy, tenacious character is much better left undisturbed until the new year. Towards the end of February is the ideal period for digging such heavy ground. I have always found that trenching very heavy land in autumn means that after falls of rain and snow the soil again becomes solidified, and it is in anything but a proper condition for the planting and sowing of crops, and especially root vegetables. I am fully alive to the fact that during this period of shortage of labour work cannot always be done at the proper time; nevertheless, the fact remains. In these gardens we are unable to practise trenching to the same extent as in former years, but fortunately the whole of our kitchen gardens had been trenched and retrenched in previous years, so that the necessity for deep cultivation is not so urgent as on gardens where the system has not been practised.—*Edwin Beckett, All Saints' House, Gardens, Hertfordshire.*

STORING APPLES.—How to keep Apples satisfactorily is indeed to the attention of fruit growers for many years past, and good advice has been offered widely on many occasions, yet it is surprising the number of people who are still ignorant of even the most elementary rules governing the keeping of fruit. For some reason or another, far too many hold the opinion that the fruit should be stored in a dry, airy room, and even go as far as to have open lattice work for shelves, which is absolutely wrong. Again, they take the greatest care that the fruits should be laid on singly, until, more than instead of the fruit keeping fresh and plump, they soon shrivel and the decay naturally intensifies. The ideal place is a well-designed, frost, rat and mouse-proof fruit room, and where even a small quantity of fruit has to be stored, it is well worth the outlay and trouble to erect. At Aldenham we never hesitate to pile the fruits one on top of another, even to six or seven layers, but it is essential to handle the fruit very carefully in all ways and sorting, always selecting any which show the slightest blemish. The cooler the temperature provided it is kept above freezing, the better. If by chance one finds a diseased Apple in mid-winter, as I have on many occasions, which has been covered with leaves, it is beautifully fresh and plump.—*Edwin Beckett.*

Obituary.

ANDREW CAMPBELL.—The death of Mr. Andrew Campbell, gardener to Lady Ardilaun, St. Anne's, Clontarf, Dublin, is a severe loss to Irish gardening. He came to St. Anne's as a boy in 1869, and, with the exception of a few years when he went to Muckross, Killarney, to improve his knowledge and to gain further experience, he passed the remainder of his life in the service of the Ardilaun family, partly as foreman at St. Anne's, later as head gardener in Lord Ardilaun's estate in the West of Ireland, Ashford, Co. Galway, and from 1895 as head at St. Anne's. It is chiefly in this last-named place that he made his reputation as an accomplished and tasteful gardener. He took a keen interest in all that concerned the progress and welfare of gardening, giving lectures and demonstrations to young gardeners, judging at shows, and encouraging and helping various societies and associations. His skill extended to all branches of gardening, both indoor and outdoor, and his name will always be associated with the fine varieties of Lobelia, Anemone japonica, and other plants raised by him.

WILLIAM FROMOW.—By the death of Mr. William Fromow, at Chiswick, on December 30, the horticultural trade loses a well-known London member. The nursery and seed business, which has branches at Chiswick, Hounslow, Windlesham, and Bagshot, was established in 1829 by deceased's grandfather. Until recently the firm consisted of three members, Messrs. Joseph, Edwin, and William Fromow. Deceased, who was aged 65, leaves a widow, one daughter, and three sons.

JOHN M. DOW.—The death took place, on the 12th ult., of Mr. John M. Dow, a well-known nurseryman and seedsman, of Falkirk. He succeeded his father in the business, which was established in 1826, and carried it on until recently under the name of David Dow and Son. Mr. Dow, who was 79 years of age, was for a long time treasurer of the Falkirk Horticultural Society.

JOHN SMITH.—We regret to record the death of Mr. John Smith, Fern Cottage, Well Street, Monifieth, at the age of 88 years. He was a native of Dundee, but spent the greater part of his life in Monifieth, where, previous to his retirement over twenty years ago, he was employed as head gardener in the Fountainbraw Nurseries of Messrs. W. P. Laird and Sinclair, Ltd.

ALEXANDER MCALLISTER. The *American Florist* records the death of Mr. Alexander McAllister, formerly a florist at Passaic, U.S.A. Mr. McAllister was a native of North Ireland. He settled in America with his parents when five years of age.

G. SCOTT.—We regret to announce the death of Mr. G. Scott, nurseryman, seedsman, and florist, of Ellesmere. Mr. Scott, who was a septuagenarian, was found dead in the 26th ult., in a greenhouse adjoining his residence.

JOSEPH BURTON.—Mr. Joseph Burton, Superintendent of the Public Parks, Leicester, died at the Abbey Park, Leicester, on the 14th inst., at the advanced age of 81 years. Mr. Burton was born at Flitwick, Bedfordshire, and began his career in the gardens of Major Brooks in that district. Later he was appointed foreman in a nursery at Huddesden, where he became associated with the late Mr. Gordon. In 1854 he removed to Leicester, and gained further experience at Messrs. Warner's Abbey Nursery. Subsequently he was appointed gardener to the late Mr. Charles Nixon, Stonygate, Leicester. He was a prominent member of the old Leicestershire Horticultural Society, and won a large number of prizes at exhibitions. In March, 1882, he accepted the appointment by the Leicester Corporation as foreman gardener, previous to the opening of the Abbey Park, and in 1892 he was appointed successor to the late Mr. John Burns as Superintendent of the Public Parks and the Recreation Grounds. He also had charge of the arrangements of the annual Abbey Park Flower Show.

ON INCREASED FOOD PRODUCTION.

POTATO SIR JOHN LLEWELYN.

IN reply to *T. N. B.* (Vol. LXII., p. 216) I may say that I have not yet tried the Sir John Llewelyn variety. Considering that it has seventeen years to its credit, I am surprised to learn that it still remains so free from disease. The large tubers and smooth white skin are suggestive of attack sooner rather than later. No doubt its earliness is a great shield against the late blight (Phytophthora), but I imagine that the nature of the soil has also much to do with relative freedom from disease. If *T. N. B.'s* soil is alluvium, or on chalk, that would account to some extent for successful results, by limiting the size of the tubers, contributing to the production of starch and general good quality, as well as warding off disease. Several varieties last year, in my experience, were attacked by disease that was not late blight, and that, too, in light soil. That Sir John Llewelyn should keep so well in a house is also surprising. Witch Hill, Epicure, British Queen, and some others kept in doors began sprouting some time ago.—*J. F.*

PROTECTING POTATOS.

THE great shortage of Potatos last winter and spring will long be remembered, and this was due to many causes, but one, and that a very important one, was, I am certain, not recognised by the majority. Many stores of Potatos were unfortunately frozen owing to lack of adequate protection. The majority of the holders of such stocks were content to rely upon the protection used during mild winters and applied no further covering when the sharp snap of frost visited us, with the result that the tubers were frozen and rendered worthless. This occurred alike to small and big holders, both in buildings and where clamped in the open, as well as the many tons lost by the hundreds stored during transit. It is to be hoped that the experience of the many will render them all the more careful to take precautions against such happenings this year, and a word of advice as to this, in case of a sharp spell of severe weather, may not be out of place at this season. In view of the great value of the Potato as food in these troublesome times, I am convinced that warning against a repetition of last year's disaster can hardly be made too public.—*E. Beckett.*

CABBAGE "SUTTON'S HARBINGER."

DURING the past few years I have grown as many varieties of Cabbage as possible with a view to testing the earliest to mature. I have to confess to in saying that "Harbinger" is well ahead of any other sort I know. Seed was sown July 27 last was germinated in skeleton frames and the seedlings planted out on a south border on September 1, at a distance of 1 foot 6 inches between the rows and 1 foot from plant to plant. So early as the middle of December fully 25 per cent. were ready for cutting, and the others are coming in rapidly. The stock is apparently correctly true, so far as I am able to detect, with not a semblance of a rogue amongst them. Later batches of the same variety are equally promising.—*E. Beckett.*

FORCING VEGETABLES.

THE forcing of vegetables on hot beds is to be encouraged in these times of food scarcity, and in places where large quantities of fallen tree leaves are available a supply should be obtained for mixing with stable litter, and the heap turned two or three times. If stable dung is not available leaves may be used by themselves for making hot beds. Stake out a piece of ground the length of the frame, and make the hot bed 2 feet wider than the frame at the back and front. Spread the hot-bed material evenly and tread it firmly until the heap is about 5 feet high. The higher the bed and the firmer it is made the more lasting will be the heat. When the bed has settled down a little fill up uneven spaces and place the frames in position. Place some rough material in the bottom of the frame. A stake should be plunged into the fermenting material, and when the heat of fermentation is declining three parts fill the frame with soil. Old potting soil mixed with loam and old hot bed manure make an ideal compost for nearly all kinds of vegetables. The materials should be thoroughly mixed. Let the lights be tilted at the back to allow superfluous heat and moisture to escape.

POTATOS.—If it is intended to force Potatos seed tubers of an early variety should, in the meantime, be sprouted in trays. When the growths are about half an inch long the tubers are ready for planting. The frames need not contain quite so much soil as for smaller growing vegetables, and this will permit of space for subsequent dressing. Plant the tubers with a trowel about 15 inches apart, and cover them with about 2 inches of soil. Admit a little air to the frame in the daytime, but close it early in the afternoon. As the shoots develop admit more air to promote sturdy growth. Protect the frames at night in frosty weather with garden mats. When moisture is needed at the roots use water from a tank in a warm greenhouse, and apply it in the mornings. When the shoots are 5 or 6 inches high the plants should be earthed up, placing the soil carefully between the rows, and watering it with a rose can. The crop will not need much more attention beyond ventilation. On favourable occasions the lights should be removed entirely. If the frame touches the glass, lift the frame up with a crowbar placed under bricks at each corner, and arrange some more hot bed material round to keep the warmth in. I grew Midlothian Early last year on this system, and also on beds in a greenhouse, but had much the best results from frames on hot-beds.

CARROTS AND TURNIPS.—Selected early maturing varieties of both Carrots and Turnips force readily, and give delicious roots for the table. The soil should be sifted through a ¼-inch sieve and the frame almost filled with it. In a day or two the soil will sink a few inches, and should then be raked over and the seed sown in drills 6 inches apart. Cover the seed with fine soil to a depth of half an inch. Water with tepid water through a fine rosed can, and close the frame. See that the frame does not become too warm, and if there is a danger of this direct it admit a little air. When the seedlings have made rough leaves thin them out sparingly, and sprinkle a little fresh soil along the rows. Do not over-water the plants, moisture arising from the hot bed will suffice while the plants are small, but direct watering may be needed as the size increases in power. The lights may be removed on warm days.

LETTUCE.—It is extraordinary the rate at which Lettuces grow in frames on hot beds. It is best to raise the plants in a warm greenhouse, and when they are large enough to handle transplant them to the prepared frames at about 9 inches apart for the Tom Thumb varieties and a little more for the larger sorts. We rely on the variety Commodore Nutt for our earliest supplies. The flavour is good, and the plants stand well. Lettuces may also be forced in greenhouses as they do not require much soil, but in too much warmth they will become infested with green fly. The roots should never be allowed to become dry or the leaves will have a bitter taste.

RADISHES.—Radishes have not the same food value as Potatos or Carrots, Turnips, or Beet, but they may be forced quickly. Some growers sow a few Radish seeds amongst other vegetables in frames, and this practice answers very well. Small growing varieties are used, as the roots mature in about three weeks, and the plants have to be cleared off. But as a rule they do better by themselves, as they will start quicker at and moisture than most vegetables. Give the roots plenty of water or they will be [illegible]. *R. W. Thatcher, Carlton Park Gardens, Maidenhead Harborough.*

CONTINUOUS CROPPING OF VEGETABLES ON THE SAME SITE.

THE question of rotation or successive cropping, as indicated by C. Turner (p. 247), is one which opens up a wide field for observation, speculation, and practical experiment. Happily, we have many data in the past upon which we can lean and take as a guide for future experiment. I accept all that he has quoted from the text books as perfectly correct from their standpoint. There is a great difference, however, between spade culture and agriculture. Good land is a mine of plant food if properly worked. When a crop of vegetables is taken off garden ground, it usually means that roots, stems and leaves are removed. This has to be made good in the form of manure, and by trenching, hoeing, and giving other good cultural treatment to enable the soil to contribute its fresh quota of plant food. On the farm this cannot be done; hence the necessity for rotation cropping in order to economise the plant foods in the soil. The land is very shallowly ploughed, and subsoiling is not general. Only the straw and the excrements of domestic animals are returned to the land, with the addition of artificial manures for certain crops; but this is altogether inadequate to restore the fertility of the land without a rotation of crops. A farm of good rotation with which I am familiar would run as follows. First year after grass, Corn; second year, Swedes, Turnips, or Potatos; third year, Corn with grass and Clover seeds; fourth and fifth years, Hay or pasture. On fertile land a second crop of Corn, Yavel is often taken off after grass, but it is seldom, if ever, so good as the first, showing that the fertility of the land has been reduced by the exhausting crop of grain.—*J. F.*

GROUND OPERATIONS.

THE words of your able correspondent, Sir Herbert Maxwell, in his concluding article on "Notes from a Galloway Garden" (p. 255), "It is from records of experience and observation under various conditions of soil and climate that we make progress in the craft," apply especially to ground operations. My policy is to dig in dry weather, not when it is raining, snowing, or freezing, and to dig a portion of the ground extra deep every year. We have had two months of ideal weather for all outside work; planting, pruning, training, cleaning, and protecting trees and bushes. My soil is light, with a gravel subsoil. The ground, which was cropped with Peas, Runner and French Beans, Autumn Cauliflower, Broccoli, Carrots, and Beet, has been dug two spits deep, and that for Onions three spits deep, adding a liberal quantity of manure.

The recent frosts have made the soil like powder, and it is ready for sowing in January and February with Broad Beans, Peas, Parsnips and Spinach. There is another account of the subject. Broccoli, Leeks, Celery, Brussels Sprouts, Kale and Savoys still [illegible] Asparagus in the kitchen garden should be dug [illegible]. I have had many loads of [illegible] decayed [illegible] and I prefer it to [illegible] I use [illegible] manure all round [illegible] manure [illegible] for the Potatos. A [illegible] manure [illegible] for the Potatos.—*Japonica.*

CROPS AND STOCK ON THE HOME FARM.

NEED FOR AN INCREASE OF CEREALS.

IN writing my first article for the New Year I desire to make a strong appeal to landowners, farmers, agents, and all who have any control of land, to add to the existing area of arable soil by ploughing up fresh grass-land. There is a likelihood of a shortage of cereal foods generally, and if we once allow the stocks of grain to be depleted it will be a long time before they are satisfactorily replenished. Apart from the national necessity, I can say from a personal point of view that much grass land in the country would be more productive if it were under the plough than it is at present. As a member of an advisory committee whose object it is to increase the arable land by 2,000 acres for cereal crops from a total of 37,261 acres in this area, I have ample opportunities for seeing that under their present tillage many fields yield to the occupier far too little in proportion to what such land ought to produce under cultivation.

I am afraid there are individuals who lack the energy necessary to make the most of their land, and there appears to be a want of knowledge of the fact that many fields now producing little ought to be made more productive.

An excuse I often hear is, "If I break up that pasture, imagine how many years it will take to replace it." This line of argument has little justification, as, under correct treatment, a good grass plot can be produced in a few years. Too many of the so-called pastures are only pastures in name. Instead of being prepared and sown with selected grasses, they were allowed to "fall down" to grass from an exhausted Sainfoin or Clover ley which had all too often become overrun with obnoxious weeds, and so long as the field was green and produced something it was called a pasture.

It is such examples as these that should be ploughed and made to produce their share of cereals. Where a pasture produces desirable grass for cows and crops of Hay of not less than 1½ ton per acre, no sane person would ask for such to be ploughed at present, because there are many plots of an opposite character that should by compulsion be ploughed and made to grow their share of corn. There are persons who excuse themselves by saying, "Oh, that field is too wet to grow Corn"—then, I say, make it drier; all too often the natural watercourses are not kept free; if they were, an improvement would quickly be apparent.

I cannot overlook the fact that there are many thousands of acres already under arable culture that do not produce crops sufficient to warrant the treatment they receive, and they need manure. Where *bona fide* want of capital prevents the purchase of manures the Government is prepared to assist by granting loans.

It is surprising what increases in the Oat crops can be secured by the aid of sulphate of ammonia sown at the rate of 1 cwt. per acre at the right moment; not only does this stimulant increase the yield by several bushels per acre, but there is, naturally, a corresponding increase in the bulk of straw, which is a boon to the cattle. The increase in crop does not stop at the Corn and straw, but we should consider the extra manure that is produced, which means in the near future still heavier crops of cereals, roots, or Hay.

There does not appear to be a shortage of motor ploughs; if there is, the various agricultural committees are prepared to send out horses and men to plough either grass or arable land. Therefore there need be no hesitancy in ploughing on that score. It is, perhaps, now too late to sow Wheat on newly ploughed grass-land with a prospect of success, although there are some few exceptions in situation, and with the newer varieties of Wheat that are more adaptable to late sowing, success may still be assured.

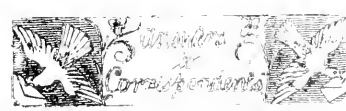
Oats are quite the most certain of cereals to sow on newly ploughed grass-land, because this cereal luxuriates in new turf more than any other. The months of February and March are quite early enough to plough grass-land for next season's Oat crop, but it is advisable to procure at once the necessary manures which so facilitate the growth of the plant, because it may be difficult to procure them later.

By way of illustration and as a guide to the inexperienced who contemplate ploughing a plot or more of what I term a poor pasture—one that only produces half a ton of Hay per year, with a little aftermath feed for cows. Such a pasture possibly has not had manure for twenty years, but the grass has been cut, made into Hay, and carted off the field all the same, until the soil has become so poor that its principal crop is Ox-eye Daisies. Such a plot will produce as many as 56 bushels of Oats per acre. This, at the present Government price of 45s. 5d. per quarter, would amount to £15 16s. 9d. The manures required would be, say, 4 cwt. of agricultural salt, 3 cwt. superphosphate, and 1 cwt. sulphate of ammonia, in all costing, say, £3 per acre. Add to this ploughing, harrowing, rolling, sowing, and harvesting and thrashing, with rent, in all, a round sum of £6, with the straw thrown in. Multiply this acre by twenty or forty and see what is the result—surely a reasonable profit and much pleasure in the production of valuable food for the country.

Potatos succeed admirably on newly ploughed grass-land provided the method of cultivation is correct. Plough at once 4 inches deep, using the skim coulter well to bury the turf. In every furrow use a subsoil plough as deep as possible to provide a better root-run for the

MR. EDWIN MOCKNEY.

Potatos. In February cross-plough deep enough to bring the turf upwards to enable its being disintegrated and made friable by repeated harrowings before planting time comes round in March or April, according to the situation. *E. Molyneux, Swanmore Park Farm, Bishop's Waltham.*



FLOWER OF SPRING CABBAGES OPENING. If you do not state when the Cabbages were planted; if they were set out too early they would be almost certain to make succulent leaves, which, if arrested by sharp frost, would be liable to open and present a bleached appearance.

FOOD CROPS IN FRAMES AND GLASSHOUSES. *H. F. H.* Potatos offer one of the best food crops for cultivation under glass. Early varieties that mature quickly, such as May Queen, Duke of York, Sharpe's Express, and Puritan, all of which are strong growers and heavy croppers, should be chosen. The sets should be placed in shallow boxes at once and sprouted in gentle warmth. Plant the tubers carefully, when the shoots are 1 inch long, in rich soil, allowing a distance of 2 feet between the rows and half that distance between the plants in the rows. Carrots should be sown in frames at once in rich soil, and the surface of the bed should be within 15 inches of the roof-glass. Early Gem is the best sort for sowing now. Cauliflowers may be grown in pots, and the seeds should be sown at once. Early Forcing and Magnum Bonum are suitable varieties. Tomatos may be planted largely in heated houses. The seed should be sown forthwith in heat and the seedlings potted as soon as they are large enough for transference. Successional sowings of this vegetable should also be made, choosing the variety Ailsa Craig.

NAMES OF FRUITS: *H. A.* 1, Barnack Beauty; 2, Gravenstein.—*G. F. M.* Apple Thomas Rivers; Pear decayed.

NAMES OF PLANTS.—*Correspondents not answered in this issue are requested to be so good as to consult the following number.*

Charles O. L. Pearce. Aeschynanthus speciosus. Native of Java. Introduced in 1845.

POTATOS WITH DISCOLOURED FLESH: *W. T.* The internal markings are caused by the disease known variously as "internal disease" or "sprain." It does not cause a rot, and the tubers can safely be used as "seed."

TENNIS COURT WITH HARD SURFACE: *J. L. B.* If the soil on which your tennis court is to be made is chavey or close, draining will be necessary before making the surface. For this purpose, use 2½ inch agricultural tiles at 9 or 10 feet centres to the main drains, and 4-inch field pipes at the sides. At the bottom, place a layer of stone shivers, rough engine ashes, or gravel, whichever is most easily available, to a depth of 4 inches, and carefully level and roll them. Place a layer of finer ashes 2 inches deep over the rough material, and level and roll again. Next place a layer of fine blaes to a depth of 1 inch, or broken brick may be employed if blaes is not procurable. Again roll firmly, and then place a layer of ½-inch blaes or brick to a depth of half an inch, level, water, and roll again. Finish off with a coat of fine screened blaes or brick ¼ inch size, and level, water, and roll once more. A good finishing material is Hart's fine brick and tile dust composition. The pre-war cost of a tennis court on the above lines would be from £70 to £100. To make a tennis court of tar-macadam, proceed as follows. After the ground has been levelled and consolidated, fix a creosoted wooden border 3 inches by 1 inch round the required area. At the bottom place a layer of broken stones or brick, size about 1½ inch or 2 inches, to a depth of 4 inches, mixed with shivers or ashes; roll thoroughly with a 10 or 15 cwt. roller. Then place 1½ inches of tar macadam in two layers, the first composed of stone in 1½ inch and 2 inch sizes, thoroughly coated with standardised bituminous tar, the second composed of crushed limestones which will pass through a ¾ inch screen, but not through a ½ inch screen, heated and mixed with bituminous tar. Roll each layer separately. From centre to sides it is necessary to have a slope of about 1-16th to 1-8th of an inch to allow of the water draining from the surface to the sides of the court. After the tar macadam has had about a week to harden, it is advisable to paint it with a light coat of bituminous tar and dust the surface with powdered limestone, which will fill up the interstices and leave a surface practically impervious to water. The pre-war cost would vary from 2s. 6d. to 3s. per square yard.

TENANT'S GREENHOUSE: *A. B.* If, as appears to be the case, the structure was merely resting on the ground by its own weight, you were quite entitled to remove it; you should ignore the demand for its return, as well as the false accusation which you suggest this demand implies.

Communications Received.—E. M.—R. W. T.—Rev. G. H.—J. S.—J. G. R.—J. G. R.—Pte. J. W. F.—Sir H. J. V.—G. H. H. W.—Solanum tuberosum.—F. E., Rhodesia.—J. E. F., C., U.S.A.—Sir F. W. M.—Japonica.—W. R. D.—J. Y. P.—W. W.—C. E.

THE
Gardeners' Chronicle
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ILLUSTRATIONS.

THE MARKET FRUIT GARDEN.

THE old year ended and the new one began with a continuance of the wintry weather which started on December 2. Comparatively few nights in December were free from frost, while on many days the temperature in the shade did not rise above freezing point, at least on the ground level. As a rule, however, in my southern district the frost was seldom severe, the maximum being 11 on the screen on the night of the 19th, while only once besides the degrees of frost exceeded seven. In the latter half of the month there was more snow than we commonly have in December, and the fall of the 16th remained on the ground longer than any previous fall during my seventeen years' residence in my present home. The renewal of snow on the last night of the past year, only two nights after the land had been cleared, was unwelcome. Throughout nearly the whole of December the wind was in a cold quarter, at first mainly north-west or north, and later north-east or north.

THE RAINFALL OF 1917.

The following table shows the rainfall and number of days on which it was measurable for each month in the year at my station:

Month.	Fall in Inches.	Number of Rain Days.
January	1.18	12
February	0.82	6
March	1.45	19
April	1.45	14
May	1.50	10
June	3.51	7
July	2.57	11
August	5.66	20
September	1.50	9
October	4.29	22
November	1.50	8
December	2.24	13
Year	27.67	151

The figures for the year compare with 33.90 inches and 171 rain days for 1916, and with 29.86 inches and 150 rain days as the average annual totals for the sixteen years of my residence here, up to the end of 1916. It will be seen that the total fall for 1917 was more than 2 inches below the sixteen years' average, in spite of the excess in June and the great excesses in August and October. The heaviest annual rainfall in the seventeen years now completed was 37.16 inches for 1903, 36.50 inches for 1915 being next. The lightest was 19.32 inches for 1901, followed by 22.70 inches for 1902, and 24.10 inches for 1904. In no other year was the fall so little as 26 inches. Since 1908 the total has never been so little as 27 inches. If I had any choice as a fruit grower in my present place, I should choose an annual rainfall of 20 inches to 24 inches. The great or considerable excess over the latter quantity in the last nine years I hold accountable for the increase of fungous diseases, particularly Brown Rot.

WORK HINDERED IN DECEMBER.

Efforts towards making good as far as possible the impairment in the condition of orchards due to the serious hindrances to hoeing throughout the greater portions of the summer and autumn were largely frustrated by the wintry character of December, when digging was not half done. The women, upon whom mainly reliance for digging has to be placed this season, came to work on fine mornings, when the land was not too wet, covered with snow, or hard with frost, but were often sent home by rain or snow, and the few men available have had to spend much of their time in hedging, instead of digging. However, if we should be fortunate enough to get a good spell of favourable weather before the end of February, there will be time to finish the work. For pruning the weather has been too cold to be

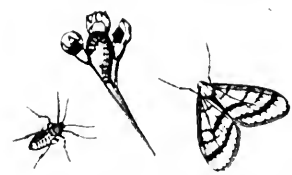

FIG. 7.—WINTER MOTH: CHEIMATOBIA BRUMATA. WINGLESS FEMALE AND WINGED MALE.

pleasant, but snow on the ground has not stopped it, and the pruners have persevered with their work on most days, except in the first two hours of the coldest mornings, when more stirring operations were substituted.

WINTER MOTH AND FROST.

Early in December, on the day after 8° of frost had been registered 4 feet from the ground level, some female Winter Moths were found on an Apple tree in a perfectly lively condition. One male was found on the same day. This appears to indicate that the pests can withstand a considerable severity of frost. Possibly they would not survive a prolonged frost, but the females might live long enough to deposit their eggs.

FRUIT CROPS AND PRICES IN 1917.

Strawberries, Raspberries, and Cherries I do not grow for market, but they yielded well as grown for home use, reckoning blackbirds and starlings as home users in relation to Cherries, nearly all of which they consume. Black Currants with me were not so abundant as in 1916, the bushes in my largest orchards having passed their prime. Prices were highly satisfactory, beating the record, so far as my experience goes, but not yet sufficing to make the total return equal to that of 1916. There was a good crop of Plums, taking all varieties together, but prices were low, mainly in consequence of the shortage of sugar—much lower than in 1916, and still further below those of the peace year, 1913. Moreover, the averages for late Plums were greatly reduced by the very large proportion of "drops," blown off by gales, which had to be sold at 1s. per half-sieve, or less. Even for gathered fruit prices were much lower than in 1913. The greatness of the yield of Rivers's Early Prolific, which started well, caused a slump after a week or so, and this affected the sale of Czars, while Victorias, Monarchs, and Pond's Seedlings made only moderate prices. My ranges, with rail and market expenses to come off, were 2s. to 6s. 9d. per half-sieve for Early Rivers, as compared with 7s. 6d. to 8s. in 1915; 5s. to 5s. 6d. for Czars, against 5s. 6d. to 8s.; 2s. 3d. to 5s. for Victorias, against 4s. 6d. to 6s. 6d.; 3s. to 4s. 6d. for Monarchs, against 5s.; and 3s. to 4s. for Pond's Seedlings, against 5s. to 6s. 6d. As to the Apple crop, it it had not been for the almost complete destruction of the blossoms on hundreds of trees, and the partial destruction on most others by the phenomenal attack of caterpillars, we should almost certainly have had a record crop. As it was, although immature trees of some varieties yielded badly, those that did crop fairly or abundantly gave quantities beyond expectations, because of the almost entire absence of "scrumps," and the full or fair size of the fruit generally. As with Plums, however, the gales brought down huge quantities of fruit, and these "drops" had mostly to be sold at low prices, though not much lower than gathered fruits of the same varieties have made in some past seasons. It was not until the glut caused by the hurried marketing of "drops" was finished that prices rose above an average peace-time level, but then they became higher than they had ever been in my experience, except, perhaps, in an occasional year of extreme scarcity. The lack of the competition of American and Canadian Apples had much effect upon prices after October.

Pears, which do not flourish in my district, and are grown on only a very small scale, cropped fairly on the whole, and sold well.

APPLES KEEPING WELL.

There are reports to the effect that Apples are not keeping well this season. Where this is the case, I think the reason must be either that they were gathered too soon, or that "drops" were stored with gathered fruit. There is no advantage in storing even the best of keepers without selecting them for perfect soundness, and selling all that are bruised or flawed in the slightest degree before the end of November. It is my usual practice to select and store the main portions of the late keeping varieties, partly until December, and partly till February or March. Lane's Prince Albert and Blenheim Pippin will usually keep well until Christmas, or possibly later, while Bramley's, Newton Wonder, Dumelow's Seedling, and Chelmsford Wonder should remain sound generally up to March. I have never known these varieties to keep better than they have kept this season. In consequence of the unusual prevalence of sooty blotch, however, I have kept a smaller quantity of Apples than usual. Probably the fungus does not affect keeping quality, but there was the fear that it would develop and possibly spread in store, so that it seemed advisable to sell the disfigured Apples when the best were selected for long keeping. If it had not been that the latest varieties were keeping remarkably well, the temptation to sell out at the high prices of December would have been irresistible. If there be any truth in the rumour that some American or Canadian Apples are to be allowed to come as parts of cargoes, the speculation of keeping some of home growth may prove an unfortunate one. In any case, however, a grower who is holding over a moderate quantity should not be condemned as a "profiteer," because it is certainly desirable that a portion of the Apple crop should be kept back to meet the demands of consumers in February and March.

QUALITY IN CULINARY APPLES.

Although among my culinary varieties of Apples there is not one which does not cook well, there are differences in sweetness, flavour, and proportions of waste in relation to thickness

or thinness of skin and size of core. Some tests made this season with early, mid season, and late varieties have thrown light upon these points. The method of testing adopted was that of trying the Apples baked whole and eaten when hot or warm. Early Julyan, which is sold for dessert as well as for cooking, mashed well, and needed only a moderate quantity of sugar, an important merit at the present time. The skin is thin, and the proportion of core is not large. It was not surprising to find Charles Ross, a regular dessert variety, sweeter, and it must further be declared the richest in flavour of any of the varieties tested, although Newton Wonder proved a good second in the two meritorious points named. The former has a somewhat thick skin, and a larger core than some of the other varieties, while the latter shows less waste. By the way, Newton Wonder is one of the pleasantest Apples to eat in its raw state at this period of the season. It is sweet, juicy, and firm, and although it has not much flavour other than sweetness, this may be said of nearly all the dessert Apples that keep well over Christmas, as they lose the spicy flavour which characterises them when they are gathered. D'Arcy Spice Pippin is an exception, and Allington Pippin is at its best at the present time—the best not being very good. Cox's Orange Pippin also keeps its flavour well, but is now past its prime. To return to the cooking test, Chelmsford Wonder was found, as in previous years, to be one of the best of cookers, while its skin is very thin indeed, and the waste in core is small. It requires a little more sugar than Bramley needs, and the latter is to be commended for fairly rich flavour, but its waste in thickness of skin and core is considerable. Dumelow's Seedling, more commonly known as Wellington, is justly famous as one of the best cookers. Its substance is soft and juicy, and its flavour excellent, while it is not at all wasteful in skin or core. But it is wasteful in respect of sugar, as its acidity is much greater than that of any of the varieties named above. Close to it in this last respect, but not nearly up to its merits, is Bismarck, which I should place lowest in the list of Apples tried. Lane's Prince Albert is a very good cooker, but not particularly striking in any of the points mentioned. To go back to a mid season variety, Royal Jubilee must be praised as one of the most economical cookers, as it needs hardly any sugar, and its skin is very thin. Its flavour is fairly rich, though less so than that of Charles Ross or Newton Wonder. Queen is more acid and more wasteful in skin and core. Warner's King is of richer flavour than Queen, but has one of the thickest of skins, and in texture is coarser than any of the varieties named above, with the possible exception of Bismarck. *Southern Grower.*

FIG. 8.—PRUMNOPITYS ELEGANS AT KEW (IN FOREGROUND). 12 TO 15 FEET HIGH.

NOTES ON CONIFERS.

XVIII.—PRUMNOPITYS ELEGANS.*

THIS South American Conifer, sometimes known as the Plum-fruited Yew, is of comparatively recent introduction, having been first sent to England in 1860 by the Veitchian collector, Richard Pearce. In the Andes of Southern Chile it is an alpine tree having a vertical range of 4,000 feet to 6,000 feet. In cultivation it is generally bushy in habit, any plant over 10 or 12 feet high being considered an exceptionally good specimen. In England it appears to prefer the milder climate of the western counties, where it attains a larger size than anywhere else in the country. The best specimen I know of is in the famous collection at Menabilly, in Cornwall. This tree was 35 feet high when I measured it in 1908, and branched into many stems at 1 foot from the ground. Unfortunately I have no record of the date when this fine specimen was planted. There are also notable examples of the Plum-fruited Yew at Tortworth Court, Gloucester, where I saw it fruiting last year. Mr. Banting, gardener to Lord Ducie, informs me that the largest specimen at Tortworth is now 20 feet high, and was planted in 1879. Eastnor Castle, Ledbury†; Kilmacurragh, Co. Wicklow; Fota Island and Lakelands, Co. Cork; and Poltalloch, Argyllshire, are other places where this Conifer has done exceptionally well.

At Rostrevor, Ireland, there is a tree about 25 feet high. I shall be glad to hear of any exceptionally good specimens.

At Yattendon Court, Berkshire, where there is an interesting collection of Conifers planted by the late Mr. Alfred Waterhouse in 1878, the Prumnopitys has attained a good size, and several trees fruited freely in 1913, as will be seen from the illustration in fig. 10. The fruit, which is not common in cultivation except in favourable seasons, is eaten by the Chilians. The Kew trees are the best I know near London, and probably date from the early seventies, but there is no official record of their having borne fruit. Webster‡ says: "It thrives satisfactorily when planted in smoky and dusty localities, and may sometimes be seen potted up and offered for sale in Covent Garden market; it makes a neat and effective pot plant, and one which, unlike many other Conifers, does not change colour with the advent of winter." Hansen§ says that Prumnopitys is rarely met with on the Continent except in Western France, as in gardens at Cherbourg. He adds that the wood is said to be very fine-veined, and consequently much valued by ebonists. Authorities differ as to whether the Plum fruited Yew is to be kept as a distinct genus, or placed among the Podocarps. The genus Prumnopitys was founded by Professor Philippi, of Santiago, in 1859 (*loc cit.*), on the plant now under discussion, Philippi having previously described it as Podocarpus andina, a name retained by Pilger, the latest monographer of the Taxaceae, and often wrongly applied to another species, P. chilina. In the true Podocarps, however, the peduncle and ovule-bearing scale become fleshy when mature, while in Prumnopitys this receptacle does not become fleshy, "receptaculam carnosum nullum," the fruits being pseudo-terminal or sessile on a common rhachis. In 1847 Endlicher proposed the name Stachycarpus for a section of the genus Podocarpus distinguished by this character and included in it P. spicata, P. andina, P. ferruginea, P. falcata, and P. taxifolia, and this section, containing species having fruits on a loose spike the axis of which does not become fleshy, was afterwards established as a genus by Van Tieghem, who gives an elaborate account of the structure and affinities of our plant, correctly citing it as Stachycarpus andinus. One hesitates however, to disturb a name in common use, and the substitution of Stachycarpus, a name practically unknown to the majority of botanists and horticulturists, would certainly lead to confusion. I therefore hesitate to adopt it. *A. Bruce Jackson.*

* *Prumnopitys elegans*, Philippi, in *Linnaea*, XXX., 731 (1859-60); Lindley in *Gard. Chron.*, 1863, p. 6, Carrière, *Traité Conif.*, ed. II., 682 (1867); Masters in *Journ. R. Hort. Soc.*, XIV., 244 (1892); Kent in Veitch's *Man. Conif.*, ed. II., 157 (1900); Clinton-Baker, *Illust. Conif.*, III., 83 (1913); Bean, *Trees and Shrubs*, ii. 225 (1914).

Podocarpus andina, Pöppig, *Nov. Gen. et Sp.*, III., 18 ex; Endlicher, *Synops. Conif.*, 219 (1847); Gay, *Fl. Chil.*, V., 403 (1849); Pallatore in *D.C. Prod.*, XVI., 519 (1868); Gordon, *Pinet.*, ed. II., 351 (1880); Beissner, *Nadelholzk*, 42 (1909).

Stachycarpus andinus, Van Tieghem, in *Bull. Soc. But. France*, 1891, p. 162.

† Figured by Veitch in *Man. Conif.*, p. 156 (1900) and Clinton-Baker, *loc. cit.*

‡ *Hardy Coniferous Trees.*

§ Pinet. Dan. in *Journ. R. Hort. Soc.*, 329 (1892).

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The dates of Meetings herein given, supplied by the Secretaries of the respective Societies, are as complete as circumstances will allow, but some appointments are not made at the time of publication, and others are liable to alteration.

☞ During the operation of the Daylight Saving Bill the times given for Astronomical and other notes must be altered accordingly.

JANUARY.

1	Tu	Croydon Hort. Mut. Imp. Soc. meeting
2	W	*Gardeners' Chronicle* first issued, 1841.
3	Th	Manchester and North of England Orchid Society meet
4	F	[Orchid Society meet
5	S	Moon: last quarter 11 h. 50 m. morn
6	S	*Epiphany*
7	M	*Plough Monday.*
8	Tu	Sun rises 8 h. 7 m
9	W	Wargrave and Dist. Gdrs. Soc. Ann. meet.
10	Th	Sun rises 8 h. 6 m
11	F	Roy. Hort. Soc. of Ireland, Comm. meet.
12	S	New Moon 10 h. 30 m. aft.
13	S	*First Sunday after Epiphany.*
14	M	United Hort. B. & P. Soc. Ctee. Meet. Bath Gdrs. Deb. Soc. Meet. Brit. Wholesale Florists Fed. Ann. Meet., Lond. Croydon Hort. Mut. Imp. Soc. Meet.
15	Tu	Royal Hort. Society's. C'tees. meet. Scottish Hort. Assoc. Ann. Meet
16	W	Manchester and North of England Orchid Society meet
17	Th	Brighton, Hove and Sussex Hort. Soc.
18	F	[meet.
19	S	Moon: first quarter 2 h. 38 m. after.
20	S	*Second Sunday after Epiphany.*
21	M	Bath Gdrs. Assn. meet.
22	Tu	Sun rises 7 h. 56 m
23	W	Wargrave & Dist. Gdrs. Soc. meet.
24	Th	Royal Botanic Soc. of London Council meet. Gard. Boy Ben. Instn. Ann. meeting and election of Pensioners at Simpson's, Strand.
25	F	
26	S	
27	S	*Septuagesima.* Full Moon: 3 h. 14 m.
28	M	Sun rises 7 h. 49 m [morn.
29	Tu	Royal Hort. Soc. C'tees. meet. Southampton Roy. Hort. Soc. Ann. meet.
30	W	Elgin Hort. Soc. meet. Irish Gdrs. Assn. meet
31	Th	Bristol Gdrs.' Soc. meet.

FEBRUARY.

1	F	Pheasant and partridge shooting ends.
2	S	Sun rises 7 h. 40 m.
3	S	*Sexagesima.*
4	M	Moon: last quarter 7 h. 52 m. morn.
5	Tu	Scottish Horticultural Association meet. Croydon Hort. Mut. Imp. Soc. meet. John Lindley b. 1799.
6	W	Roy. Agr. Soc. Council meet. Wargrave & Dist. Gdrs. Soc. meet.
7	Th	Manchester and North of England Orchid Society meet.
8	F	Royal Gardeners' Orphan Fund Annual Meeting and Election of Candidates, at Simpson's, Strand, 3 p.m. Roy. Hort. Soc. of Ireland Council meet.
9	S	
10	S	*Quinquagesima.*
11	M	New Moon 1 h. 5 m. morn. United Hort. B. & P. Soc. C'tee. meet. Bath Gdrs. Deb. Soc. meet.
12	Tu	Royal Hort Soc Committees meet.
13	W	
14	Th	Sun rises 7 h. 20 m.
15	F	Moon rises 8 h. 29 m. aft.
16	S	
17	S	*First Sunday in Lent.*
18	M	Moon: first quarter 0 h. 57 m. morn.
19	Tu	Croydon Hort. Mut. Imp. Soc. meet.
20	W	Wargrave & Dist. Gdrs. Soc. meet.
21	Th	Manchester and North of England Orchid Society meet. Brighton [Hort. Soc. meet.
22	F	
23	S	
24	S	*Second Sunday in Lent.*
25	M	Full moon: 9 h. 35 m. aft.
26	Tu	Royal Horticultural Society's Committees meet. Southampton Roy. Hort. Soc. Council meet.
27	W	Elgin Hort. Soc. meet.
28	Th	Roy. Botanic Soc. of London Council meet. Bristol Gdrs.' Soc. meet.

MARCH.

1	F	Sun rises 6 h. 50 m
2	S	Moon rises 11 h. 9 m. aft.
3	S	*Third Sunday in Lent*
4	M	Sun rises 6 h. 44 m.
5	Tu	Scottish Horticultural Association meet Croydon Hort. Mut. Imp. Soc. meet.
6	W	Moon: last quarter 0 h. 44 m. morn. Roy. Agr. Soc. Council meet. Wargrave & Dist. Gdrs. Soc. meet.
7	Th	Manchester Orchid Society meet.
8	F	Roy. Hort. Soc. of Ireland, Council meet.
9	S	Sun rises 6 h. 32 m.
10	S	*Fourth Sunday in Lent.*
11	M	United Hort. B. & P. Soc. C'tee. meet. and Ann. meet. Bath Gdrs. Deb. Soc. meet.
12	Tu	Royal Horticultural Society's Committees meet. Northampton Roy. Hort. Soc. Council meet.
13	W	Sun rises 6 h. 23 m.
14	Th	Robert Hogg d. 1897.
15	F	Sun rises 6 h. 19 m.
16	S	Moon rises 7 h. 27 m. morn.
17	S	*Passion Sunday.*
18	M	Bath Gdrs.' Assn. meet.
19	Tu	Moon: first quarter 1 h. 30 m. aft.
20	W	Wargrave & Dist. Gdrs.' Soc. meet.
21	Th	Manchester and North of England Orchid Society meet. Brighton [Hort. Soc. meet.
22	F	
23	S	
24	S	*Palm Sunday.*
25	M	*Lady Day.*
26	Tu	Royal Horticultural Society's Committees meet. Southampton Roy. Hort. Soc. Council meet.
27	W	Full moon: 3 h. 33 m. aft. Elgin Hort. Soc. meet. Irish Gdrs. Assn. meet.
28	Th	Roy. Botanic Soc. of London Council meet. Bristol Gdrs. Assn. meet.
29	F	
30	S	Sun rises 5 h. 43 m.
31	S	*Easter Sunday.*

APRIL.

1	M	*Easter Monday.*
2	Tu	Scottish Horticultural Association meet. Croydon Hort. Mut. Imp. Soc. meet.
3	W	Roy. Agr. Soc. Council meet. Wargrave and Dist. Gdrs. Soc. meet.
4	Th	Manchester and North of England Orchid Society meet. Moon: last quarter 1 h. 33 m. aft.
5	F	
6	S	Sun rises 5 h. 29 m.
7	S	*Low Sunday.*
8	M	United Hort. B. & P. Soc. C'tee. meet. Bath Gdrs.' Deb. Soc. meet.
9	Tu	Royal Hort. Soc. Committees meet.
10	W	Sun rises 5 h. 20 m.
11	Th	New moon: 4 h. 34 m. morn.
12	F	Roy. Hort. Soc. of Ireland, Council meet.
13	S	Sun rises 5 h. 13 m.
14	S	*Second Sunday after Easter.*
15	M	Dr. Maxwell T. Masters b. 1833.
16	Tu	Croydon Hort. Mut. Imp. Soc. meet.
17	W	Wargrave & Dist. Gdrs. Soc. meet.
18	Th	Manchester & N. of England Orchid Soc. meet. Moon: last qr. 4 h. 8 m. morn.
19	F	Charles Darwin d. 1882.
20	S	Sun rises 4 h. 58 m.
21	S	*Third Sunday after Easter.*
22	M	Bath Gdrs. Assn. meet
23	Tu	Royal Horticultural Society's Committees meet. National Auricula and Prim. Soc. Annual Ex. London.
24	W	Elgin Hort. Soc. meet. Irish Gdrs.' Assn. meet.
25	Th	Roy. Botanic Soc. of London meet. Bristol Gdrs.' Soc. meet.
26	F	Full moon: 8 h. 5 m. morn.
27	S	Sun rises 4 h. 44 m.
28	S	*Fourth Sunday after Easter.*
29	M	Sun rises 4 h. 40 m.
30	Tu	Southampton Roy. Hort. Soc. Council meet.

MAY.

1	W	Roy. Agr. Soc. Council meet.
2	Th	Sun rises 4 h. 34 m.
3	F	Moon: last quarter 10 h. 26 m. aft.
4	S	National Auricula Soc. Ann. Ex., Manchester.
5	S	*Rogation Sunday.*
6	M	Sun rises 4 h. 27 m.
7	Tu	Royal Horticultural Society's Committees meet. Scottish Horticultural Association meet. Croydon Hort. [Mut. Imp. Soc. meet.
8	W	
9	Th	Manchester and North of England Orchid Society's Annual Meeting.
10	F	New moon: 1 h. 1 m. aft. Roy. Hort. [Soc. of Ireland, Council meet.
11	S	
12	S	*Sunday after Ascension.*
13	M	United Hort. B. & P. Soc. C'tee. meet [Bath Gdrs. Deb. Soc. meet.
14	Tu	Sir Edwin Ray Lankester b. 1847.
15	W	Sir Edwin Ray Lankester b. 1847.
16	Th	Brighton, Hove & Sussex Hort. Soc. meet.
17	F	Moon: first quarter 8 h. 14 m. aft.
18	S	Sun rises 4 h. 7 m
19	S	*Whit Sunday.*
20	M	Bath Gdrs.' Assn. meet
21	Tu	Croydon Hort. Mut. Imp. Soc. meet. Roy. Guernsey Agr. & Hort. Soc. Ann. Ex.
22	W	Opening of International Horticultural Exhibition, 1866.
23	Th	Roy. Botanic Soc. of London meet.
24	F	Sun rises 4 h. 0 m.
25	S	Full moon 10 h. 32 m. aft.
26	S	*Trinity Sunday.*
27	M	Sun rises 3 h. 57 m.
28	Tu	Royal Horticultural Society's Committees meet. Southampton Roy. Hort. Soc. Council meet. [Assn. meet
29	W	Elgin Hort. Soc. meet. Irish Gdrs.
30	Th	Dr. Maxwell T. Masters d. 1907.
31	F	[Bristol Gdrs.' Soc. meet.

JUNE.

1	S	Sun rises 3 h. 52 m
2	S	*First Sunday after Trinity.* Moon: last quarter 4 h. 20 m. morn.
3	M	Sun rises 3 h. 50 m.
4	Tu	Scottish Horticultural Association meet. Croydon Hort. Mut. Imp. Soc. meet.
5	W	Roy. Agr. Soc. Council meet.
6	Th	Sun rises 3 h. 48 m.
7	F	Moon rises 1 h. 18 m. morn.
8	S	New moon: 10 h. 3 m. aft.
9	S	*Second Sunday after Trinity.*
10	M	United Hort. B. & P. Soc. C'tee. meet. Bath Gdrs. Deb. Soc. meet.
11	Tu	Sun rises 3 h. 46 m.
12	W	Sir Harry Veitch b. 1858.
13	Th	Sun rises 3 h. 45 m
14	F	Roy. Hort. Soc. of Ireland, Council meet.
15	S	Moon rises 11 h. 3 m morn
16	S	*Third Sunday after Trinity.* Moon: first quarter 7 h. 12 m. aft.
17	M	Bath Gdrs. Assn. meet
18	Tu	Royal Hort. Soc. Committees meet. Croydon Hort. Soc. meet.
19	W	
20	Th	Brighton Hort. Soc. meet.
21	F	Sun rises 3 h. 44 m.
22	S	Moon rises 6 h. 47 m. aft.
23	S	*Fourth Sunday after Trinity.*
24	M	Mid-summer Day. Full moon: 10 h. 38 m. morn.
25	Tu	Southampton Roy. Hort. Soc. Council meet.
26	W	Elgin Hort. Soc. meet. Irish Gdrs.' Assn. meet. Southampton Rose Show.
27	Th	Roy. Botanic Soc. of London meet. Bristol Gdrs. Soc. meet.
28	F	
29	S	Sun rises 3 h. 47 m.
30	S	*Fifth Sunday after Trinity.* Sir Joseph D. Hooker b. 1817

JULY.

1	M	Moon: last quarter 8 h. 43 m. morn.
2	Tu	Roy. Hort. Soc. C'tees. meet Scot. Hort. Assoc. meet. Nat. Sweet Pea Soc. Ann. Ex., London. Croydon Hort. Mut. Imp. Soc. meet.
3	W	Roy. Agr. Soc. Council meet.
4	Th	Sun rises 3 h. 50 m.
5	F	Moon rises 1 h. 3 m. morn. [mingham.
6	S	Nat. Carnation Paney Soc. Show at Bir-
7	S	*Sixth Sunday after Trinity.*
8	M	New moon: 8 h. 22 m. morn.
9	Tu	
10	W	
11	S	Sun rises 3 h. 57 m.
12	F	Roy. Hort. Soc. of Ireland, Council meet.
13	S	Sun rises 3 h. 59 m.
14	S	*Seventh Sunday after Trinity.*
15	M	Bath Gdrs. Assn. meet.
16	Tu	Roy. Hort. Soc. C'tees meet. Nat. Carnation Soc. Annual Exh., London. Croydon Hort. Mut. Imp. Soc. meet.
17	W	
18	Th	Brighton, Hove & Sussex Hort. Soc.
19	F	Sun rises 4 h. 6 m. [meet.
20	S	Moon rises 1 h. 30 m. aft.
21	S	*Eighth Sunday after Trinity.* [(2 days).
22	M	Southampton Roy. Hort. Soc. Show
23	Tu	Southern Counties Carnation Soc. Ann. Exh. at Southampton (2 days). Full [moon: 8 h. 35 m. aft.
24	W	
25	Th	Roy. Botanic Soc. of London meet. Bristol Gdrs. Soc. meet.
26	F	Midland Carnation & Picotee Soc.
27	S	[Annual Ex. (2 days).
28	S	*Ninth Sunday after Trinity.*
29	M	Sun rises 4 h. 15 m.
30	Tu	Royal Horticultural Society's Committees meet. Moon: last quarter 1 h. 14 m. aft.
31	W	Elgin Hort. Soc. meet. Irish Gdrs.' Assn. meet.

AUGUST.

1	Th	*Lammas Day.*
2	F	Sun rises 4 h. 23 m.
3	S	Sun rises 4 h. 45 m. morn.
4	S	*Tenth Sunday after Trinity.*
5	M	*August Bank Holiday.*
6	Tu	Scottish Horticultural Association meet. New moon: 8 h. 30 m. aft.
7	W	
8	Th	Elgin Hort. Soc. Annual Ex.
9	F	Roy. Hort. Soc. of Ireland, Council meet.
10	S	Sun rises 4 h. 37 m.
11	S	*Eleventh Sunday after Trinity.*
12	M	United Hort. B. & P. Soc. C'tee. meet. Bath Gdrs.' Deb. Soc. meet.
13	Tu	Royal Horticultural Society's Committees meet.
14	W	Roy. Botanic Soc. of London Ann. meeting. Moon: first quarter 11 h. 16 m. aft.
15	Th	Brighton Hort. Soc. meet.
16	F	Sun rises 4 h. 46 m.
17	S	Robert Uvedale d. 1722.
18	S	*Twelfth Sunday after Trinity.*
19	M	Bath Gdrs.' Assn. meet.
20	Tu	Croydon Hort. Mut. Imp. Soc. meet.
21	W	Sun rises 4 h. 55 m.
22	Th	Full moon: 5 h. 2 m. morn.
23	F	Sun rises 4 h. 58 m.
24	S	Moon rises 7 h. 35 m. aft.
25	S	*Thirteenth Sunday after Trinity.*
26	M	Sun rises 5 h. 2 m.
27	Tu	Royal Horticultural Society's Committees meet. Southampton Roy. Hort. Soc. Council meet.
28	W	Moon: last quarter 7 h. 27 m. aft.
29	Th	Bristol Gdrs.' Soc. meet.
30	F	Sun rises 5 h. 9 m.
31	S	

SEPTEMBER.

1	S	*Fourteenth Sunday after Trinity.*
2	M	Sun rises 5 h. 14 m.
3	Tu	Scottish Horticultural Association meet. Croydon Hort. Mut. Imp. Soc. meet.
4	W	Glasgow & W. of Scotland Hort. Soc. Ann. Ex. at Glasgow (2 days).
5	Th	New moon: 10 h. 44 m. morn.
6	F	Moon rises 6 h. 34 m. morn.
7	S	Sun rises 5 h. 22 m.
8	S	*Fifteenth Sunday after Trinity.*
9	M	United Hort. B. & P. Soc. C'tee. meet Bath Gdrs. Deb. Soc. meet.
10	Tu	Royal Horticultural Society's Committees meet and National Dahlia Soc. (combined show).
11	W	
12	Th	Sun rises 5 h. 29 m.
13	F	Roy. Hort. Soc. of Ireland Comm. meet. Wargrave & Dist. Gdrs. Soc. meet. Moon: first quarter 3 h. 2 m. aft.
14	S	
15	S	*Sixteenth Sunday after Trinity.*
16	M	Bath Gdrs. Assn. meet.
17	Tu	Croydon Hort. Mut. Imp. Soc. meet
18	W	Sun rises 5 h. 36 m.
19	Th	Brighton, Hove & Sussex Hort. Soc
20	F	Full moon: 1 h. 1 m. aft. [meet
21	S	Sun rises 5 h. 44 m.
22	S	*Seventeenth Sunday after Trinity.*
23	M	Sun rises 5 h. 47 m.
24	Tu	Royal Horticultural Society's Committees meet. Southampton Roy. Hort. Soc. Council meet.
25	W	Elgin Hort. Soc. meet. Irish Gdrs. Assn. meet.
26	Th	Bristol Gdrs. Soc. meet.
27	F	Moon: last quarter 4 h. 30 m. morn Wargrave & Dist. Gdrs. Soc. meet
28	S	Sun rises 5 h. 55 m
29	S	*Eighteenth Sunday after Trin. Michaelmas*
30	M	Sun rises 5 h. 58 m

OCTOBER.

1	Tu	Scottish Horticultural Association meet. Croydon Hort. Mut. Imp. Soc. meet.
2	W	Sun rises 6 h. 2 m.
3	Th	Moon rises 4 h. 25 m. morn.
4	F	Sun rises 6 h. 6 m.
5	S	New moon: 3 h. 5 m. morn.
6	S	*Nineteenth Sunday after Trinity.*
7	M	Sun rises 6 h. 10 m
8	Tu	Royal Hort. Soc. Committees meet.
9	W	
10	Th	Sun rises 6 h. 15 m.
11	F	Roy. Hort. Soc. of Ireland Council meet.
12	S	Sun rises 6 h. 18 m
13	S	*Twentieth Sunday after Trinity.* Moon: first quarter 5 h. 0 m. morn.
14	M	United Hort. B. & P. Soc. C'tee. meet. Bath Gdrs. Deb. Soc. meet.
15	Tu	Croydon Hort. Mut. Imp. Soc. meet. Southampton Roy. Hort. Soc. Autumn (Fruit Production) Show (2 days).
16	W	Sun rises 6 h. 25 m.
17	Th	Brighton, Hove & Sussex Hort. Soc. meet.
18	F	Sun rises 6 h. 29 m.
19	S	Full moon: 5 h. 35 m. aft.
20	S	*Twenty first Sunday after Trinity.*
21	M	Bath Gdrs. Assn. meet.
22	Tu	Royal Horticultural Society's Committees meet
23	W	Sun rises 6 h. 38 m.
24	Th	Moon rises 8 h. 31 m. aft.
25	F	Wargrave & Dist. Gdrs. Soc. meet.
26	S	Moon: last quarter 5 h. 35 m. aft.
27	S	*Twenty second Sunday after Trinity.*
28	M	Sun rises 6 h. 47 m.
29	Tu	Southampton Roy. Hort. Soc. Council meet.
30	W	Elgin Hort. Soc. meet. Irish Gdrs. Assn. meet and Apple Competition.
31	Th	Bristol Gdrs.' Soc. meet.

NOVEMBER.

1	F	John Lindley d. 1865.
2	S	Sun rises 6 h. 55 m.
3	S	*Twenty-third Sunday after Trinity.* New [moon: 9 h. 2 m. aft.
4	M	
5	Tu	Royal Horticultural Society's Committees meet. Scottish Horticultural Association meet. Croydon Hort. Mut. Imp. Soc. meet.
6	W	Roy. Agr. Soc. Council meet.
7	Th	Alfred Russel Wallace d. 1913.
8	F	Roy. Hort. Soc. of Ireland, Council meet. Corn Exchange Annual Chrysanthemum and Fruit Show.
9	S	
10	S	*Twenty fourth Sunday after Trinity.*
11	M	Moon: 1r. t quarter 4 h. 46 m. aft.
12	Tu	
13	W	Sun rises 7 h. 15 m.
14	Th	Moon rises 1 h. 59 m. aft.
15	F	Sun rises 7 h. 18 m.
16	S	Moon rises 2 h. 51 m. aft.
17	S	*Twenty-fifth Sunday after Trinity.*
18	M	Full moon: 7 h. 33 m. morn.
19	Tu	Royal Horticultural Society's Committees meet. Croydon Hort. Mut. Imp. Soc. meet.
20	W	
21	Th	Brighton, Hove & Sussex Hort. Soc. meet.
22	F	Wargrave & Dist. Gdrs.' Soc. meet.
23	S	Sun rises 7 h. 32 m.
24	S	*Twenty-sixth Sunday after Trinity.*
25	M	Moon: last quarter 10 h. 25 m. morn.
26	Tu	Southampton Roy. Hort. Soc. Council meet.
27	W	Elgin Hort. Soc. meet. Irish Gdrs.' Assn. meet.
28	Th	Bristol Gdrs. Soc. meet.
29	F	John Ray born 1628.
30	S	Sun rises 7 h. 43 m.

DECEMBER.

1	S	*Advent Sunday.*
2	M	Sun rises 7 h. 49 m.
3	Tu	Royal Horticultural Society's Committees meet. Scottish Horticultural Association meet. Croydon Hort. Mut. Imp. Soc. meet. New moon: 3 h. 19 m. aft.
4	W	Roy. Agr. Soc. Council meet.
5	Th	Sun rises 7 h. 56 m.
6	F	Wargrave & Dist. Gdrs.' Soc. meet.
7	S	Sun rises 7 h. 52 m.
8	S	*Second Sunday in Advent.*
9	M	United Hort. B. & P. Soc. C'tee. meet. Bath Gdrs.' Deb. Soc. meet.
10	Tu	Sir Joseph D. Hooker d. 1911.
11	W	Moon: first quarter 2 h. 31 m. morn.
12	Th	Sun rises 7 h. 58 m.
13	F	Roy. Hort. Soc. of Ireland, Council meet.
14	S	Sun rises 8 h. 0 m.
15	S	*Third Sunday in Advent.*
16	M	Bath Gdrs.' Assn. meet.
17	Tu	Full moon: 7 h. 18 m. aft.
18	W	Sun rises 8 h. 3 m
19	Th	Brighton, Hove & Sussex Hort. Soc. meet.
20	F	Wargrave & Dist. Gdrs.' Soc. meet.
21	S	Sun rises 8 h. 5 m.
22	S	*Fourth Sunday in Advent.*
23	M	Moon rises 10 h. 58 m. aft.
24	Tu	Sun rises 8 h. 6 m.
25	W	*Christmas Day.* Moon: last quarter 6 h. 31 m. morn.
26	Th	*Bank Holiday.*
27	F	Sun rises 8 h. 8 m.
28	S	Moon rises 3 h. 21 m. morn.
29	S	*First Sunday after Christmas.*
30	M	Sun rises 8 h. 8 m.
31	Tu	Southampton Roy. Hort. Soc. Council meet.

Miscellaneous Addresses.

The Address given is that of the Secretary.

Board of Agriculture and Fisheries.—1, Whitehall Place, London, S.W. 1.

British Carnation Society.—T. A. Weston, Plenadale, St. John's Road, Orpington.

British Gardeners' Association.—Cyril Harding, 1, Ulysses Road, Fortune Green, London, N.W. 6.

Commons and Footpaths Preservation Society.—25, Victoria Street, London, S.W. 1.

Country Gentlemen's Association, Letchworth, Herts

Department of Agriculture and Technical Instruction for Ireland, Upper Merrion Street, Dublin.

Food Production Department (Board of Agriculture).—Sir Arthur Lee, 72, Victoria Street, S.W. 1.

Gardeners' Royal Benevolent Institution.—C. J. Ingram, 92, Victoria Street, Westminster, S.W.

Horticultural Trades' Association.—Chas. E. Pearson, Lowdham, Notts.

Irish Gardeners' Association and Benevolent Society James J. McDonough, 23, Upper Sackville Street, Dublin

National Amateur Gardeners' Association.—A. W. Bull, Stonebugh, Park Road, New Barnet, Herts.

National Auricula and Primula Society.—T. E. Hemmond, 16, Hamilton Road, Reading (Southern Section); E. Banks, 104, Murdock Road, Handsworth, Birmingham (Midland Section); John Tonge, 22, Booth Street, Manchester (Northern Section).

National Carnation and Picotee.—A. J. Keen, 51, The Avenue, Southampton (Southern Section); W. Rogerson, Oak Lea, Melbor, Derbyshire (Northern Section)

National Chrysanthemum Society.—C. H. Curtis, 35, Wellington Street, London, W.C. 2.

National Dahlia Society.—J. B. Riding, Forest Side, Chingford, Essex.

National Gladiolus Society.—R. Atkinson, The Haven, Warsash, Hants.

National Hardy Plant Society.—A. J. Marsell, 74, Beechfield Road, Finsbury Park, N. 4.

National Rose Society.—Courtney Page, 25, Victoria Street, S.W. 1.

National Sweet Pea Society.—Henry D. Tigwell, Harrow View, Greenford, Middlesex.

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National Viola and Pansy Society.—H. Woolman, 802, Stratford Road, Birmingham

Netherland Horticultural Federation.—C. van Leeuwen, The Hague, Holland.

Nurserymen's, Market Gardeners' and General Horticultural Insurance Corporation.—A. J. Munro, 41 and 42, King Street, Covent Garden, London, W.C. 2.

Royal Agricultural Society of England.—Thomas McRow, 16, Bedford Square, London, W.C. 1.

Royal Botanic Society.—H. W. Woodford, Inner Circle, Regent's Park, N.W. 8.

Royal Caledonian Horticultural Society.—Donald Mackenzie, 1x, St. Andrew Square, Edinburgh.

Royal English Arboricultural Society.—Edward Davidson, Estate Office, Haydon Bridge, Northumberland.

Royal Gardeners' Orphan Fund.—Brian Wynne, 19, Bedford Chambers, Covent Garden, London, W.C. 2.

Royal Horticultural Society.—Rev. W. Wilks, M.A., Royal Horticultural Hall, Vincent Square, London, S.W. 1.

Royal Horticultural Society of Ireland.—E. Knoaldin, 5, Molesworth Street, Dublin

Royal Scottish Arboricultural.—Robt. Galloway, 19, Castle Street, Edinburgh.

Royal Society for the Protection of Birds.—23, Queen Anne's Gate, Westminster, S.W. 1.

Scottish Horticultural Association.—A. D. Richardson, 31, St. Andrew Square, Edinburgh.

Small Holders' Union, Ltd., 7, Queen Street Place, Southwark Bridge, E.C. 4.

United Horticultural Benefit and Provident Approved Society.—A. C. Hill, 35, Alexandra Road, West Kensington Park, W. 11

Vacant Land Cultivation Society.—14, Buckingham Street, W.C. 2

Low & Malcomson, Ltd., Printers, Duke Street, High Holborn, London, W.C.

DEGENERATION OF POTATOS.

THE question of degeneration of Potatos is well worthy of consideration in these days of the necessity for an increased production of food. I am firmly of the opinion that in the great majority of cases Potatos destined for seed purposes do not receive good treatment, and at the present time every endeavour should be made to encourage those seedsmen and growers who make the production and selection of seed sets a speciality. The whole history of the cultivated Potato reveals the necessity of wise and judicious planting for the production of seed tubers. The importance of keeping stock in a high state of excellence is realised by every producer of foodstuffs, and the recent sales of pedigree Shorthorn cattle in the North of Scotland, record prices being the rule, show that the stockbreeder, at least, is determined to maintain his herd in an efficient condition. If it pays the stockbreeder to give huge prices for stock, it will also pay the Potato grower to buy seed sets that have been carefully selected. The average Potato crop per annum is something above six tons per acre. I saw crops raised last autumn which yielded a return of 20 tons per acre. This is an instance of a commercial and not an experimental planting of Potatos. In trials last season I saw returns well over 40 tons per acre, and this simply instances what the Potato is capable of doing if soil conditions and the seed are right.

There can be no question, I think, that degeneration in certain Potatos is an accepted fact. How, considering average conditions, could it be otherwise? A decade ago this matter was the subject of an article in the *Journal of the Board of Agriculture*.* In that article it was pointed out that during the past few years many inquiries had been addressed to the Royal Botanic Gardens, Kew, as to the reason why Potato tubers failed to form sprouts at the proper season, even when placed under proper conditions for doing so. This condition of things, it was stated, was not confined to this country. In Germany† serious losses were sustained owing to the sterility of Potato sets. The German experience was that very few of the eyes produced sprouts, and the sets at the time of lifting were not shrivelled and dried as is the case under normal conditions, but were solid and firm and in many cases had actually increased in size. The results of investigations made by Dr. Schlich and Dr. Steikermann proved the absence of any specific disease, and failure was attributed to the practice of growing the same kind of Potato from sets produced on the spot for a long time.

A French investigator, Dr. Delacroix,‡ described the occurrence, on a large scale, of a similar sterility of Potato tubers. In this case there was also an absence of any specific disease, and the trouble was considered to be due to decadence and loss of vitality brought about by the employment of the asexual method of reproduction invariably followed.

We have thus three very definite cases of decadence recorded over ten years ago, and the non-sprouting of seed sets was undoubtedly a very common occurrence last spring. The writer of the article in the *Journal of the Board of Agriculture* to which I have already made reference states that the sterility, or failure to form sprouts, was investigated by experiments conducted at Kew, and extending over three years. The non sprouting trouble was accompanied by a combination of two distinct specific conditions. These were stated to be: (1) more or less arrest of the development of the vascular system of the tuber; (2) comparative absence of the ferment or enzyme called diastase from the tuber.

The results of investigation, so far as the article referred to is concerned, point out that degeneration in Potatos has been caused by the methods of selection and the lines followed in producing certain improvements, which have in some instances favoured other unsuspected modifications, which have resulted in sterility of the tubers. The improvements cited are: increase of crop; improved flavour; smooth and even surface; immunity from disease.

The summation of the matter simply amounts to this: The demand by the public for ware is for tubers that possess a shallow eye, so as to avoid waste in paring. I admit, of course, that no Potato should be pared, but the majority of consumers still require education upon this point of domestic economy. Whilst a tuber with a shallow eye may be an improvement from the culinary standpoint, it is the result of certain methods of inter-breeding and selection which have been accompanied by a serious degeneration—in the case of many varieties—of the fibro-vascular system. In short, shallow-eyed tubers are defective in a means whereby the starch stored in them can be utilised by being converted into a liquid condition in order to feed the young shoot emanating from the shallow eye. It is declared that in many high grade Potato diastase is produced in such small quantities that it can only convert a very meagre proportion of the starch that is present into sugar. Thus the shoot must emerge from the eye usually at the apical end of the tuber in a state of semi-starvation.

Now, the above facts may explain another matter. During the last ten years the country has had to combat Wart disease due to Synchytrium endobioticum. I have observed that many of the most consistently immune varieties to that disease are sorts having deep eyes. That was a type of Potato that was practically driven out of commerce, but as necessity knows no law growers who have to deal with infected soil conditions have been compelled to accept them. Are these deep-eyed immune varieties they possess undoubted vigour and they are heavy croppers able to develop such a sufficiency of diastase that they feed the shoot so thoroughly and satisfactorily that it gives it great power to resist the attacks of the fungus which causes wart disease? On the other hand, are shallow eyed varieties unable to develop sufficient diastase to enable them to feed the shoot so that it has the power or stamina to resist attack? These are points which scientists might consider. In an attack of wart disease it is known that infection take place through the eyes of the tuber, and investigators have stated that the starch grains are the last to be attacked, and remain white and uninjured in the affected cell.§ Has the spread of wart disease been promoted by degenerate varieties of Potatos?

Our hitherto loose methods in the importation of seed sets have also resulted, to a certain extent, in the introduction of the disease known as Macrosporium solani. Dr. Hornet has instanced at least three separate occasions upon which "leaf curl" disease has been introduced into Scotland from the Continent with the Potato known as "President." This disease is, I am afraid, spreading very rapidly in Britain, and the authorities may require to give it serious attention. It is, apparently, a disease of a contagious character, and would seem to require control, otherwise another certain source of degeneration is likely to arise. Had wart disease only been rigidly dealt with on its first appearance, how much destruction might have been saved! Let us try and avoid more trouble in respect of notifiable diseases amongst Potatos, but this can only be done by encouraging the selection of sound seed by careful growers.

It has yet to be proved, I think, that vegetative methods of propagation are responsible for degeneration. Take, for example, the case of the old show Dahlia "James Cocker." Mr. Robert Fife, an undoubted expert upon the Dahlia, assures me he has propagated that variety from cuttings for over forty years, and he sees no sign of degeneration. He maintains that it is still as good as it was when he handled it first. I have yet to learn, too, that Potatos raised from cuttings will degenerate provided that the cuttings are well cultivated. I have seen some heavy crops raised from cuttings, but further experience with the tubers so raised is necessary before any statement can be made on this method of propagation.

It is clear that there has been degeneration in many varieties of Potatos during the last twenty years, but I would attribute this almost solely to inter-breeding coupled with bad methods of seed selection, and careless cultivation. *George M. Taylor.*

* *Journal of Board of Agriculture*, Vol. XIV., No. 7.

† *Deutsche Landwirtsche Presse*, Nos. 91, 94, 95, and 97, 1905.

‡ *Comp. Rend.*, Dec., 1903, p. 1006.

§ U.S.A. Dep. Agr. Bur. Pl. Ind., Circ. 25, March, 1910.

‖ *Jour. R.H.S.*, Vol. XXXVI., Part III., May, 1911.

A DAY'S TRAMP IN THE HIMALAYAN FOOTHILLS IN OCTOBER.

STARTING out from Motiana (7,984 feet above sea level), we skirted some precipitous rocks with many waterfalls. Here was the wild Maidenhair in profusion, and a red succulent plant of the Sedum class, making a bright show of colour, but not now in flower.

We also noted a delicate pale blue Hawkweed, a branching Harebell, a wild white Scabious, and a belated Begonia still in bloom. Along the watercourses white Spiræas were flowering, and later in the day we saw several plants of wild Doronicum, and a most beautiful Delphinium of blue shade. The coolies, who seem to be very fond of flowers, presented my wife on the way with bunches of wild Violets and Cinerarias. The ground in places was carpeted with Potentilla nepalensis, making a rich glow of colour. We passed an orchard at the hamlet of Kodiali, and shortly afterwards we had tiffin, when the woods got thicker, and selected a site near some magnificent Deodars, while Spruce, Firs, and Holly give the locality quite an English aspect. After an hour's steady climb we suddenly debouched upon Narkanda (9,132 feet), showing a wonderful panorama of snow mountains beyond the wooded Pine slopes.

The next morning we took a walk along the Baghi road, covering just four miles in the hour. Here the lateral growth of the Pine trees is but feeble, but in height they more than atone for their lack of breadth. We came to huge slabs of rock, which run straight up in jagged blocks, giving the effect of flying buttresses of some giant cathedral, and well named "The Cathedral Rocks." Their bare sides are softened by grey blue clumps of a beautiful rock Campanula, the feature of which is the length of its stigma; the natives call them "Sinseri," and these, combined with Maidenhair and wild Cinerarias growing in the crevices of the rock, could not have been bettered by any rock garden made by human skill. On the return journey a large snake crossed our path, and we had much difficulty restraining the natives from stoning it, but the snake seemed eager to hide itself in the jungle opposite, and quickly achieved its purpose.

We passed some terrestrial Orchids, now, alas! dying down; no seed remained, but what was left of stem and leaves resembled a Bee Orchid. The sun had now gone in, and it was so cold that when we reached the Dâk Bungalow at Narkanda we had to warm ourselves by a fire before tiffin. The afternoon we spent admiring the panoramic effects of the snow mountains, and we better to do this we climbed up 300 feet, and from here we could see Simla, and Jakko Mountain, nearly fifty miles to the south, and obtained a complete view of the range of snow mountains to the north. *Charles Orr White (Captain).*

The Week's Work.

THE KITCHEN GARDEN.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

PREPARATIONS FOR FORCING.—A sufficient quantity of leaves and stable litter should be prepared as fermenting material for the hotbeds. Fallen tree leaves are to be preferred to manure, as they furnish a more gentle and lasting warmth. If an isolated bed is made, it should be about 18 inches wider than the frame to be placed on it. Mix the materials well together, turning them at short intervals, to allow the rank gases of fermentation to escape

CARROTS.—Young tender Carrots may be grown in brick pits for very early supplies, using only sufficient fire heat to keep out frost. The sweetest and most delicious roots are those grown in frames during April and May. Should the weather continue favourable, prepare a bed and sow the seed with as little delay as possible. Two lights will afford roots over a long time, and a second sowing made a month or six weeks later will continue the supply. Early Gem, Champion Scarlet Horn and Improved Early Horn are suitable varieties for forcing.

FRENCH BEANS.—In winter French Beans give only very light crops, and they need much room and fire heat; batches raised during the next two months are much more productive. Kidney Beans require plenty of warmth, light and room, and unless these conditions can be provided it is unwise to sow seeds before March, when climbing French Beans, such as Tender and True, are much more profitable. The climbing varieties may be planted out and the shoots trained close to the roof-glass on strings or sticks. Magpie, Ne Plus Ultra, and Canadian Wonder may be sown in 8-inch pots from this date forward.

PEAS.—Peas are not amenable to hard forcing, nor are they very profitable under glass, but an early crop may be had, and the best results are obtained by growing dwarf varieties in pots. The plants need plenty of light and air. Seed of such varieties as Little Marvel, Laxtonian, Pioneer, and Excelsior may be sown at once in small pots to have plants in readiness for forcing when pits are available.

GENERAL REMARKS.—Roots of Rhubarb and Seakale should be prepared for forcing according to demand, selecting the strongest crowns for the purpose. A Mushroom house, or any dark, warm structure will be found suitable for forcing these plants. Set up seed tubers of early varieties of Potatos in trays or boxes; place the very earliest varieties, such as Sharpe's Victor, May Queen, and Midlothian Early, in a warm pit for growing in pots and frames later.

THE ORCHID HOUSES

By J. COLLIER, Gardener to SIR JEREMIAH COLMAN, Bart., Gatton Park, Reigate.

SEED-SOWING.—The raising of seedling Orchids is now very general, and in many establishments hybrids are the principal feature of the collection. Many of the seed vessels are ripening, and with the turn of the year, bringing lengthening days, the conditions become favourable to the successful germination of the seed. Orchids may be dealt with in two groups, epiphytic and terrestrial. Seed of the terrestrial group, which, so far as potting purposes are concerned, may include Odontoglossums and Cochlodas, is best sown around the base of a plant of the same genus. Some raisers are successful in sowing on pots of about 60 size containing medium sized seedlings, whilst others have equally good results by using larger pots containing older specimens. If large specimens are used as host plants, select varieties of no particular merit; for example, some of the O. Edwardii crosses; such plants may be utilised during successive or alternate seasons. The plants should be repotted at least one month previous to seed sowing, and it is always advisable to sow in several pots, in order to ensure a crop of seedlings. Before sowing, water the compost freely, and scatter the seed evenly over the surface. For several weeks afterwards use extra care in watering, or much of the seed may be washed away. In dealing with Cypripediums, select plants that have been recently repotted or those with compost in a sweet, healthy condition. With epiphytic Orchids, and particularly those of the Cattleya group, a different procedure must be adopted. It is best to have suitable cases in which to hasten the germination of the seeds. If cases are not available, a propagating frame may be substituted. The temperature must be kept equable and the surroundings moist. In a close frame there is less evaporation of moisture than in the house itself, therefore there will be less need for frequent waterings. The following is the method of sowing:—Place a piece of new canvas, cheese cloth, or some such porous material about 4 or 5 inches square, on the palm of the hand, and cover it with finely-chopped Sphagnum moss. Wrap the edges of the cloth about the moss, forming it into a ball. The ball should be pressed firmly into a well-drained pot or deep Orchid pan without side holes, of a size just large enough to hold it. Let the surface be ½ inch below the rim. Fill the sides with chopped Sphagnum-moss, from which the larger heads have been removed. The seeds sometimes fail to germinate on the canvas, when a good crop is secured on the Sphagnum moss, while the reverse often occurs. The material in the pots should be watered thoroughly, and when the superfluous moisture has drained away, the seeds may be sown on the canvas. Transfer the pots to the cases. The soil should never be allowed to become dry, and the pan should be shaded from strong sunlight.

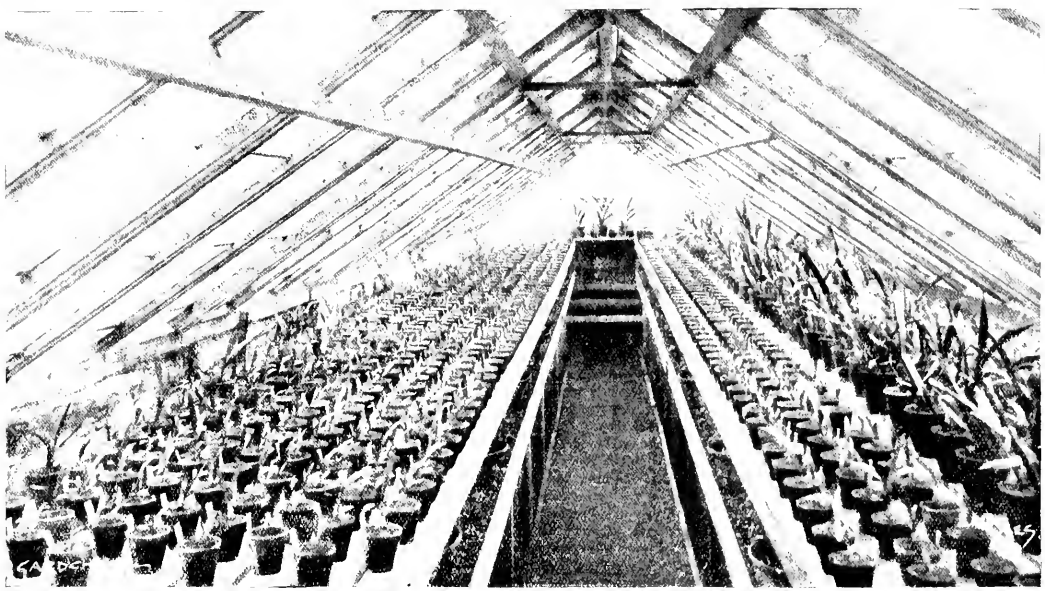

FIG. 9.—HOUSE OF SEEDLING ORCHIDS.

FRUITS UNDER GLASS.

By W. J. GUISE, Gardener to Mrs. DEMPSTER, Keele Hall, Newcastle, Staffordshire.

FIGS IN BORDERS.—Considerable economy in fuel may be effected by not starting early houses containing trained trees growing in borders. In the meantime the work of pruning should be completed at the earliest opportunity. Remove old, exhausted, and weak growths wherever there are sufficient short-jointed, medium-sized shoots to replace them. Some of the new shoots at the base of old, established trees trained on trellises near the roof-glass should be trained in to replace old, fruitless branches. After the work of pruning is completed tie the branches in bundles and sling them temporarily to the trellises with stout cord. Scrub the woodwork and wash the glass with soap and water, and limewash the walls. The trees may then be cleansed thoroughly of insect pests, such as scale and red spider, by means of an insecticide. When tying the branches permanently allow sufficient space for light and air to enter the tree. Give the borders attention, removing old top-dressings and mulchings, and replace with a compost consisting of fibrous loam, mortar rubble, wood ash, and a small quantity of

manure from a spent Mushroom-bed. A mulch of half-decayed manure may be applied with advantage when the fruits are swelling. Should the borders be dry give sufficient water to wet the roots thoroughly before the trees are started into growth: until that time the houses should be left open and kept as cool as possible. When forcing is started maintain a moist atmosphere. The night temperature should be 50° to commence with, gradually increasing the amount of warmth to 55° when the trees break into growth. The opportunity may be taken when pruning to select a few well-ripened shoots, some 3 or 4 inches long, as cuttings. They will root readily in a moist atmosphere and, with careful pinching, form fruiting trees in twelve months.

FIGS IN POTS.—Early Fig trees in pots in active growth require plenty of water at the roots. Use tepid water both for watering and syringing, which should be done twice daily. Maintain a moist atmosphere with a free circulation of air. Late trees in pots for successional fruiting should also receive attention. Follow the treatment recommended for Figs in borders.

MELONS.—With inefficient labour it is not advisable to sow Melon seed too early, for unless a suitable temperature is maintained the plants will be ruined in their early stages of growth. Where there is no difficulty in this respect, select seeds of an early variety, sow them singly in small pots, and plunge the seed-pan in a bottom heat of 75°. When the seedlings are through the surface place the seed pans near the roof glass, to ensure sturdy growth. The plants may be repotted once before they are placed in large receptacles.

PROPAGATING VINES.—Should young vines be required for planting this year they may be raised from eyes inserted at the present time in uno moiel Melon or Cucumber pits. Place the eyes singly in 2½ inch pots filled with fibrous loam. The temperature should be 65°, and the atmosphere not too moist.

THE HARDY FRUIT GARDEN.

By JAS. HUDSON, Head Gardener at Gunnersbury House, Acton, W.

FRUIT TREES ON WALLS.—Take advantage of every favourable opportunity to complete the work of pruning and training. With good management, the work may be done without much discomfort to the staff. If wall nails are used, the French nail of wrought iron is much more durable than the older kind of cast iron. The point is more blunt, but with care this defect will not occasion any trouble. Medicated shreds have now almost superseded the older sort made of ordinary cloth. The shreds may be had in reels of various widths, to be cut into suitable lengths. I have been forced to use the tips of the yellow Willow for tying, and they are quite suitable when in expert hands. The use of wires on fruit walls does away to a great extent with the need for nailing. The wires are strained horizontally along the wall, but perpendicular strands of tarred string must be supplemented for Peach and Nectarine trees or any kind of tree trained in fan shape. I am not in favour of galvanised wire, and have discarded it for wrought or annealed wire. I found that the young growths of Peaches and Nectarines were killed when they came into contact with the galvanised wire. To remedy this I had recourse to painting, and found that to be efficacious. This also needs to be done occasionally in the case of the wrought wire. In wiring walls, a mistake is frequently made of arranging the wire at, say, one inch away from the wall, whereas it should be as close to the wall as possible, to prevent cold currents of air passing behind the trees.

AUTUMN-FRUITING RASPBERRIES.—I strongly recommend the cultivation of autumn fruiting Raspberries. The fruits are most useful, both for dessert and cooking purposes. They are in season with us from the middle of August to the middle of November. In France I have seen the canes bearing very heavy crops. In one instance I noted that the plants were temporarily covered with old lights to obtain fruits as late in the season as possible. I would advise that a small plantation, at least, be formed. Ground for planting this small fruit should be prepared at once by deep trenching. Dig in a fair amount of farmyard manure as the work proceeds. The canes should be cut down to the base and planted in rows at 4 feet apart, allowing a space of 2 feet between each set of stools. Planting should be finished early in February. It is immaterial whether the plantation is made in a light, open situation or one shaded by other fruit trees, provided the shading is not very dense. Where the ground contains roots of other fruit trees it is not possible to trench in the same thorough manner as in the open, but it should be kept well cultivated. During the past season our best crops were obtained from canes that were rather heavily shadowed by early standard Cherries. In this instance the variety was the Hailshamberry, which with us is one of the best of the Brambles. The old Belle de Fontenay is not to be despised; it is one of the dwarfest and wants but little support. November Abundance, a more recently introduced variety, has also proved to be excellent for its late fruits.

PLANTS UNDER GLASS.

By E. J. HARRISS, Gardener to Lady WANTAGE, Lockinge Park, Berkshire.

CHRYSANTHEMUMS.—The bulk of the cuttings should be inserted without further delay, so that the old stools may be disposed of. Any varieties which have failed to produce sufficient cuttings should be placed in a warm house and syringed twice daily. Recently-rooted cuttings must not be coddled, or they will make spindly growth. Place them on a shelf near the roof glass in a house from which frost can be excluded. These young plants must not be exposed to cold draughts.

WINTER FLOWERING PELARGONIUMS.—After Pelargoniums have finished flowering they should be placed near the roof glass in a light, airy house, where the growth will become somewhat hardened and suitable for cuttings. When ready, the shoots may be taken off and inserted around the sides of 5 inch or 5 inch pots in a compost consisting of loam, leaf mould, and sharp sand. Pass the soil through a ¼ inch meshed sieve. Place a little fine sand at the base of each cutting, as it is inserted in the pot, as a precaution against damping. Make the soil firm around the base of the shoot. After watering the soil, place the pots on a shelf in a house with a temperature of about 50°.

SCHIZANTHUS.—When the earliest plants of Schizanthus are ready for transference, they should be given their final shift into pots about 7 inches or 8 inches in diameter. Use a fairly rich compost, such as a mixture of loam, leaf mould, manure from an old Mushroom bed, and sharp sand. When potted, place the plants on a cool base in a light house or pit. Unless it is required to hasten the plants into flower, do not employ artificial warmth, except to exclude frost. Godetias, Clarkias, and other annuals may be afforded similar treatment. These plants are all subject to attacks of aphis, which may be destroyed by light fumigations with a nicotine compound.

RICHARDIA AFRICANA.—The earliest plants of Richardia africana are flowering, and in order to keep the flowers fresh for as long as possible, the plants should be grown in a cool house. The roots need plenty of stimulants, and they must never be allowed to become excessively dry. Later plants may be hastened into flower as required by growing them in more warmth.

BEGONIA GLOIRE DE LORRAINE.—As plants of Begonia Gloire de Lorraine pass out of flower they should be partly cut back and placed closely together in a moderately warm house. Allow them to rest for a week or two by reducing the amount of water at the roots. At a still later period the shoots should be shortened and the plants placed in a moist, warm house, to encourage the growth of suitable shoots as cuttings. The roots must be watered very carefully, or many of the plants will die. Spray them two or three times daily with lukewarm rain-water. When the young shoots are large enough they may be inserted in shallow pans filled with fine sand. Place them in the propagating case and shade from bright sunshine until roots form. This Begonia may also be propagated from leaves, but this method of increase should only be adopted when cuttings cannot be procured, as cuttings always make the best plants.

THE FLOWER GARDEN.

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

GLADIOLUS.—Corms of Gladioli should not be cleaned bare, as used to be the custom. It is far better to allow the outer skin to remain, and also any small corms that may cluster about the old one, until the time for planting both. I have allowed a large quantity of the plants, chiefly seedlings and two-year-old corms, to remain in the ground with a layer of soil spread above them after the foliage was removed. The strain at present grown is much hardier than the old seedlings from Gandavensis, and also much less liable to disease, while the plants increase immeasurably more.

SPANISH IRIS.—The shoots of Spanish Irises here are well above ground, which is somewhat weedy, though forked over in October. The weeds are mostly Chickweed, which is not easily eradicated by hoeing. A light forking is far better, and it can be done when the surface is not dry enough to permit of hoeing. A thick dressing of soot is very beneficial to the Irises, and should be applied not later than February. Flag Irises should have been cleaned and surface-dressed.

ANNUALS FOR FILLING BEDS.—It is not necessary now to apologise for utilising annuals in flower beds. Rather, the person who neglects them, and especially in these times, might be expected to make his apologies. A flower garden may be furnished very pleasingly with annuals alone. A number of beautiful kinds are tall growing and need much labour in staking and tying; those I am about to recommend need no support. I have also discontinued the growing of Antirrhinums on account of the labour involved in producing strong plants. The two plants that have given the greatest satisfaction are Godetia Schaminii fl. pl. massed with a broad band of Saponaria calabrica around it. I am using these plants for the third year in succession. Two years ago Verbena venosa was mixed with the Godetia, but the raising of the Verbena entails considerable labour, and perhaps is not worth it. A mass is very beautiful by itself. Last year a few beds here were filled with common Marigolds; and of these there are the improved varieties Lemon and Orange coloured, which are also very effective. The blue grey Cornflower is also fine, and others of blue shades to plant are Larkspur Emperor, Phacelia Campanularia, and Nigella Miss Jekyll. I strongly recommend Tagetes signata pumila for its clear yellow. This plant is easily raised in heat. April is soon enough to sow the seeds, and when they are inserted thinly the seedlings do not require transplanting till they are ready to dibble into the ground at the end of May. Silene Armeria is also a good subject, but requires some attention to associate it properly. All the Emperor Larkspurs are useful. I raise them in March in heat and transplant from the seed box whilst the seedlings are still small, after hardening them. The Nemesias are so well known as to need no recommendation. A very valuable, easy-to-produce plant is to be found in the old Ageratum mexicanum, which in rich soil attains considerable proportions. For associating with pink flowers it is admirable. Seeds sown in heat in March provide large plants by the end of May, and should the stock be limited from seed, it may be rapidly increased from cuttings taken from the seedlings and in turn from the rooted cuttings. There are also the Single Asters, either in mixed colours or separately. The seeds should not be sown till April in a cold frame, thence dibbled into flowering quarters, at a few inches apart. Though comparatively tall, the plants do not need stakes as supports. Besides these I shall note only Virginian Stocks for carpeting Gladiolus; Nasturtium Aurora (Dwarf), for very poor soils, and Tropæolum aduncum as a trailer.

EDITORIAL NOTICE.

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.*

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

Special Notice to Correspondents. — *The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.*

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

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.*

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 38°.

ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, *Thursday*, January 10, 10 A.M.: Bar. 29.5; temp. 43.0°. Weather—Occasional sunshine.

1918.

Our readers will scarcely feel surprise at the many omissions of pre-war events to be found in the Almanac for 1918 which we issue with the present number. The times are out of joint, and the immediate issues before the country far too serious to allow individuals or societies to indulge in amenities that in times of peace not only contribute to the joy of life, but in the case of the great horticultural exhibitions and village flower shows, have educational results of the greatest value. In present circumstances the labour they occasion and transport facilities needed for their staging cannot be provided; consequently the great provincial shows, such as Shrewsbury, Wolverhampton, York and Newcastle, are abandoned, as they have been since 1914, and the Chelsea and Holland Park shows of the Royal Horticultural Society, which lapsed last year for the first time, are omitted from the calendar.

It is profoundly to be regretted that the violent interruption of our everyday habits injuriously affects the gardening charities. Both the Gardeners' Royal Benevolent Institution and the Royal Gardeners' Orphan Fund have been in the habit of promoting annual banquets that served to raise very large sums of money over and above the amounts obtained from the usual subscriptions and donations. The committees of these essential institutions are now deprived of this valuable source of income, whilst the need for financial help increases from year to year. In proof of this, we may draw attention to the announcement in another column of the forthcoming annual meeting of the Benevolent Institution. The highest number of pensioners the committee can recommend, having due regard to the financial outlook, is fifteen, yet the list of approved candidates includes the names of fifty-eight aged gardeners and gardeners' widows. What disappointment there must be after such an election, notwithstanding the timely help the Victorian Era and Samaritan Funds mercifully contribute to those who prove unsuccessful at the polls. If we realise these facts as we should, we shall each and all do our utmost to compensate in some degree at least for the losses our charities have to bear owing to the war, in order that the stream of charity be not dried nor the necessitous lack the kindly help that has previously been given them. This is surely a case where sympathisers would do well to purchase National War Bonds for presentation to the Funds.

In view of what has already been said, it is a source of pleasure to see that the Royal Horticultural Society will continue to hold the fortnightly meetings, thus providing the only public occasions on which gardeners may meet each other and their friends, and inspect seasonal displays of vegetables, fruits and flowers.

The food question dominates all others for the time being. The whole industry of gardening is bending itself to the task of raising increased food crops, and skilled gardeners, including both professionals and amateurs, are leading and helping the movement, first by doing all the practical work they can accomplish themselves, and secondly, by advising and encouraging the less experienced in the cultivation of their allotments and waste land. Do not let any of us for a moment lose sight of the fact that the most that can be done in these ways is the least that will suffice to solve the food problem now to be faced by our people, nor indulge in ignorant optimism that would weaken our efforts and dull our enthusiasm. These primary calls on the services of gardeners must be met fully and frankly. In addition, they must attend as best they may to the collections of valuable plants, the neglect of which would cause serious waste of accumulated efforts on the part of plant collectors and plant breeders; and give what care they can to the more permanent features of the garden, in order, for instance, that trees and shrubs may not be allowed to suffer unnecessarily in the present crisis.

So shall we tide over the period that must elapse before a satisfactory peace is established, when we may confidently anticipate an era in which gardening of all types will spread abundantly, more appreciated than ever for the calm and seductive enjoyment it will afford after a period of unparalleled unrest.

THE VICTORIA MEDAL.—Owing to the death of five holders of the Victoria Medal of Honour of the Royal Horticultural Society, the Council has appointed the following gentlemen to this distinction, viz.: Mr. W. JACKSON BEAN, Mr. F. J. CHITTENDEN, Sir HERBERT MAXWELL, Bart., F.R.S., D.C.L., LL.D., Dr. A. B. RENDLE, F.R.S., Sir ALBERT KAYE ROLLIT, LL.D., D.C.L., Litt.D.

GARDENERS' ROYAL BENEVOLENT INSTITUTION.—The seventy-eighth annual general meeting of the members and subscribers of this institution will be held at Simpson's Restaurant, 101, Strand, London, on Thursday, the 24th inst., at 2.45 p.m., for the purpose of receiving the report of the committee and the accounts of the institution (as audited) for the year 1917, electing officers for the year 1918, and for the election of fifteen annuitants on the funds from a list of 58 candidates. The chair will be taken by Sir HARRY J. VEITCH, treasurer and chairman of committee, at 2.45 p.m. The poll will be open at 3 p.m. and close at 4 p.m.

TRIALS AT WISLEY.—The Royal Horticultural Society will carry out trials of the following vegetables at their gardens at Wisley during 1918:—Climbing Beans of all kinds (½ pint of smaller, 1 pint of larger), Brussels Sprouts (½ ounce), Carrots (½ ounce), Kale (½ ounce), Vegetable Marrows (one packet). The quantity of seeds required should be sent so as to reach the Director, R.H.S. Gardens, Wisley, Ripley, Surrey (Horsley station, L. and S.W.Ry.), from whom the necessary entry forms may be obtained, on or before January 31, 1918. A trial of autumn-fruiting Strawberries will also be carried out. Twenty plants of each variety intended for trial, or a packet of seeds, should be sent to the gardens on or before February 28, 1918.

WASTE LEATHER AS A FERTILISER.—In the course of an article on the uses to which condemned Army boots can be put, the *Journal of the Royal Society of Arts* states that on account of its nitrogen content, leather waste is regarded as possessing considerable potential value as a manure. It decomposes very slowly, however, and requires special treatment to make it effective. Chrome-tanned material is found to be hurtful to plant life.

THE NORTH OF ENGLAND HORTICULTURAL SOCIETY.—This Society has just issued a "statement of affairs," and it is satisfactory to find that the deficit of £632 in the Society's accounts has been wiped out, and a credit balance obtained of £74. The acting secretary, the Rev. J. BERNARD HALL, contributes to the pamphlet a detailed programme for reconstruction after the termination of the war—a programme that suggests a very wide range of activities.

THE LONDON SCHOOL OF ECONOMICS AND POLITICAL SCIENCE (UNIVERSITY OF LONDON).—A course of public lectures has been arranged by the London School of Economics in connection with the Ministry of Food on "Problems of Food Control in Time of War." Another course of public lectures has been arranged in furtherance of the aims of the Imperial Studies Committee of the University on "The Empire, its Commerce and Commercial Requirements," the subjects dealt with being artificial manures, fodder, meat, fibres, timber, wood pulp and paper-making materials, leather and tanning materials. A new course of lectures on "Business Organisation" is also announced in the Department of Commerce. Particulars can be obtained from the Secretary of the School, Clare Market, W.C.

FOOD PRODUCTION IN CEYLON.—The Ceylon Board of Agriculture is taking active steps to increase food production in the island, and to that end has issued instructions and circulars to cultivators, including principal headmen, presidents of village tribunals, and local authorities. It recommends in particular the greater production of Yams, Sweet Potatos, Manioc, and vegetables of all kinds.

POTASH FROM KELP. According to an article in the *Popular Science Monthly* (New York) the undertaking recently established in California for obtaining supplies of potash from seaweed is proving so successful that one firm alone is producing three times as much potash

as was previously imported annually from Germany. The Kelp is cut by means of a reaper which cuts the weed 4 feet below the water. The Kelp is carried from a boat-harvester by a continuous belt elevator to a crushing mill. It is stated that sufficient potash is being obtained by these means to supply not only American needs but also those of all the Allies.

THE ORDER OF THE BRITISH EMPIRE. The services rendered by the Food Production Department are recognised in the list of new members of the Order of the British Empire. The Director-General, Colonel Sir ARTHUR HAMILTON LEE, K.C.B., M.P., as a result of whose untiring energies the Department has grown rapidly in strength and effectiveness, becomes a Knight Grand Cross. Mr. LAWRENCE WEAVER, who, as head of the Supplies Division, is doing a work the great value of which is highly appreciated both by the Government and by the leaders of the country, becomes a C.B.E. A like honour is conferred on Prof. T. B. WOOD, who has rendered conspicuous service to the Board of Agriculture, and who was recently appointed a Development Commissioner, and on Viscount GOSCHEN, head of the Labour Division of the Food Production Department. Among the list of Officers of the Order are Mr. CHARLES MARTIN, who, as Assistant Director of Horticulture, was conspicuously successful in obtaining the production of large quantities of last year's fruit crop; Professor E. J. RUSSELL, F.R.S., Director of Rothamsted Experiment Station, who is an active member of the Technical Advisory Committee; Mr. P. G. DALLINGER, Assistant Director of Supplies, and specially in charge of subjects relating to the Potato; Mr. THOMPSON, also of the Supplies Division; and Mr. FRENCH, who is general secretary to the Department. The membership of the Order has been conferred on the Hon. ALICIA CECIL, Assistant Director of Horticulture, whose services in building up a county horticultural organisation have been of great value to the Department; and Lieut. ASCROFT, in charge of the spraying section of the Horticultural Division.

SHORTAGE OF BASKETS AND BAGS.—Enquiries amongst fruit growers and market gardeners have revealed a very serious shortage in baskets and bags. All fruit growers, market gardeners, and others who may have baskets and bags in their possession are asked to take every precaution against loss or damage.

Photograph by E. J. Wallis.

FIG. 10.—PRUMNOPITYS ELEGANS: FRUITING BRANCH (SLIGHTLY REDUCED) FROM TREE AT VATTENDON COURT, BERKSHIRE.

(See p. 12.)

RUBBER FROM WEEDS.—A note* on the investigations carried out in Germany claims that promising results have been obtained by extracting rubber from weeds, and in particular from Euphorbia Peplus. It is claimed that 1 hectare (2½ acres) will yield 42 kilos of rubber and 120 kilos of fatty substances. Euphorbia Cyparissus promises even better results.

CANALS AND WATERWAYS.—A report has been issued on the subject of the use at present made of the canals and inland waterways of the country, by the County Purposes Committee which was asked to investigate and report on this subject in September last by the Corporation of London. The report states that a number of industries suffer through the deficiency in cheap water transport, which throws an unnecessary burden on the railways; and further suggests that the whole system of the inland waterways of the country should be brought under one control, that of the State.

OIL FROM THE BICUHYBA NUT.—The Brazilian "Bicuhyba" nut, which is found principally in the States of Minas Geraes and Espirito Santo, is understood, states the *Journal of the Royal Society of Arts*, to have been tested in the United States as an oil-producing nut. The flesh is said to contain slightly more than 60 per cent. of fats, and the shells a little more than 4 per cent. The flesh of the nut constitutes about three-fifths of its entire weight. At current prices for the Bicuhyba nuts, the cost of the extracted oil would be about 1½d. per lb., without freight.

PRICES FOR HOME-GROWN ONIONS.—The British Onions Order, dated December 24, 1917, made by the Food Controller under the Defence of the Realm Regulations, provides that no person shall sell British Onions by wholesale except to a regular wholesale dealer or to a retail dealer, and no person shall buy British Onions by wholesale except a regular wholesale dealer or retail dealer, and no wholesale dealer or retail dealer shall sell or dispose by wholesale of British Onions purchased by him except in the ordinary course of his business as a dealer in Onions. Every sale of a quantity exceeding 7 lbs. shall be deemed to be a sale by wholesale. Notwithstanding the provisions of this clause a grower whose whole crop of British Onions does not exceed 10 cwt. may sell such Onions by retail subject to the restrictions imposed by the subsequent clauses of this Order. No person (except a regular wholesale dealer or retail dealer purchasing for resale) shall in any week directly or indirectly purchase a greater total quantity of British Onions than 7 lbs. in all, and no British Onions shall be purchased, whether by one person or by several, for consumption in any household in excess of a quantity of 7 lbs. in all in any week. The maximum price on the occasion of a sale of British Onions by retail shall be at the rate of 3d. per lb. No additional charge may be made for packages or for giving credit or for making delivery. The maximum price on the occasion of a sale of British Onions by the grower shall be at the rate of £15 per ton on the basis (i) that the Onions are either loaded by the seller into trucks at the seller's railway station or (at the buyer's option) into a ship or barge not less convenient to the seller; (ii) that bags (if required) are supplied by the buyer, and (iii.) that no commission is paid. If bags are provided by the seller the price per ton may be increased by a sum not exceeding 10s., whether the bags are returnable or not; the maximum price and terms of sale shall be varied as mentioned in that clause. The maximum price on the occasion of any sale of British Onions other than a sale thereof by the grower or a sale by retail shall be at the rate of £19 per ton, on the basis that the Onions are delivered ex warehouse or market at the seller's customary place of sale and that bags are provided by the seller.

PUBLICATIONS RECEIVED.—***Sixteenth Report of the Woburn Experimental Fruit Farm.*** By the Duke of Bedford and Spencer Pickering. (London: The Amalgamated Press, Ltd.) Price 2s. 9d., post free.—***Journal of the Board of Agriculture,*** Vol. XXIV., No. 9, December, 1917. Price 4d.—***The Vegetable Garden.*** By E. J. S. Lay. (London: Macmillan & Co., Ltd.) Price 1s. 6d.—***Bulletin of Miscellaneous Information, Royal Botanic Gardens, Kew.*** No. 9 and 10, 1917. (London: Jas. Truscott & Son.) Price 6d.—***Somatic Mutations in Sunflowers.*** By T. D. A. Cockerell. Reprinted from the *Journal of Heredity*, Vol. VIII., No. 10, Washington, U.S.A.

* *Agric. News*, Barbados, Nov. 3, 1917.

ON INCREASED FOOD PRODUCTION.

EARLY POTATOS

ALL who possess early borders should endeavour to produce as many new Potatos as possible before the old stock is exhausted. The ground should be dug deeply, and, if necessary, a dressing of decayed horse manure applied. Pulverise the soil thoroughly, and leave it exposed to the weather until the time for planting arrives. The seed tubers should be selected at once and placed in shallow boxes to sprout. Choose moderate-sized tubers, and let them be fully exposed to the light in a place that is not too warm, or exposed to cold draughts. A room or shed having a temperature of 45° is suitable. At the time of planting the ground should be forked over and trenches made with a spade 6 inches deep. A layer of well-decayed leaf mould or the material from a spent Mushroom-bed may be placed in the bottom of each trench to a depth of 2 inches, and as planting proceeds place the material carefully around the plants with the hands. Allow at least 2 feet between the rows and 1 foot from plant to plant. When the young shoots begin to show through the surface, careful attention is necessary to protect them from excessive cold. Dry soil may be placed around the stems as they push through the ground, or the borders may be covered with thatched hurdles, which are easily removed when the weather is warm. Neglect of covering soon results in the destruction of a valuable crop. One of the best Potatos for early cropping is May Queen. A few early Potatos may also be grown close up to a south wall on which fruit trees are trained. Soil for the purpose may be placed just under the wall, and removed as soon as the crop is lifted. Old soil which has been used for growing Melons, if exposed to the weather during the winter, will be suitable for the purpose. *J. D.*

MANURING FOR POTATOS (see p. 9).

Japonica expresses doubts as to the wisdom of autumn digging and manuring of ground of a distinctly porous nature intended for a Potato crop. For many years I grew a considerable quantity of both early and late Potatos on such land, and was forced to the conclusion that it was not a profitable method, and, had labour permitted, I would have delayed all digging and manuring of this light soil until the early spring, but this could not be done. My method for the Potato crop was to bastard trench the ground during the winter, as circumstances permitted, and at planting time to spread over it a quantity of well-decayed manure which had been especially reserved for the Potatos.

The sets were planted in drills, and I found that not only was the manure well mixed with the soil through the drill making and filling, with, later on, hoeing and earthing up, but that it remained just where it was wanted, in reach of the Potato roots. An additional advantage was that by this system the crop did not suffer from summer droughts as was the case when the manure was buried under the top spit in the orthodox manner.

I am convinced that the often-repeated advice to spread chemical manures along the bottom of Potato drills is a wasteful mistake, for long before any roots can get to it all the virtue of the sulphate of ammonia and superphosphate of lime, which in these days form the base of Potato manures, will be washed by rains into the sub soil. A far better plan is to delay the application of chemical manures until the haulm is 4 inches or 5 inches high, and then to spread it alongside the rows and hoe it in as soon as circumstances permit. A generally suitable mixture for this purpose would be sulphate of ammonia 3 parts, superphosphate 5 parts, well mixed and spread at the rate of 3 ounces to 4 ounces to the yard run between the rows.

GROUND OPERATIONS.

THE correspondence on this subject makes it abundantly clear that no hard-and-fast rules can be laid down in gardening. The measure of success depends on local conditions and the practitioner. Many of us have found that it pays best to dig certain heavy soils as early in the winter as possible, throwing the spits up roughly to allow frosts and winds to exert their beneficial influences in disintegrating the lumps, so that when seed time comes the clods fall to pieces, giving that fine tilth which the old-time writer ever insisted on, and which is so essential to perfect seed germination and the raising of healthy and vigorous seedlings. But in opposition to this generally practised method, Mr. Edwin Beckett tells us that towards the end of February is the ideal period for digging heavy, tenacious soils, and we know what he has accomplished by that method, so that in his particular case it is no doubt correct. But I see several objections where a considerable area of heavy land is so treated in these days of labour shortage. The period for cultivating heavy soils is generally strictly limited, for if not caught when at the right condition they will "set as hard as bricks," and even a moderate tilth becomes an impossibility, and one may have to wait weeks for the right weather conditions to again occur. Consequently, the seed sowing would be late if all the required ground had not been dug, and except in favoured instances this would be the case. Many light soils may be dug, levelled, and sown within a couple of days of rain, even in the early spring, when the air is not so drying as it becomes later in the season. *A. C. Bartlett.*

—— Having had a few years' experience in the cultivation of Onions on the heavy clay soil of Middlesex, it may interest Mr. Davis and others to know that the following method of preparing the beds has, without exception, proved the best means of obtaining good results. Before the winter I incorporate with the heavy soil ashes from the garden fire, spreading them over the ground to a depth of 2 inches. The soil is thrown up roughly in digging. The beds are 5 feet in width at the base, sloping to 4 feet wide on the surface. An alley is formed between the beds 1 foot wide and 1 foot in depth, and the soil from the gully is thrown on to the beds, leaving it rough, to be disintegrated by the weather. The clods break readily after they have been subjected to frosts, and when the surface has been made fine again, the beds are in condition for the final preparation in the spring, when I sow a mixture of soot and salt lightly over the surface, and finish off for the planting of box-sown Onions, or for sowing the seed direct, as may be, drawing the drills at right angles to the alleys. Heavy soil prepared roughly with the ashes and afterwards finished off with a light coating of lime I have found to answer for both Leeks and Cauliflowers raised under glass. *W. J. Taylor, Framewood Gardens, Stoke Poges, Bucks.*

PREPARATION OF FRESH ALLOTMENTS

I LIVE in a large manufacturing town where plots of building land and other almost derelict spaces have been, or are being, laid under contribution for allotments. They are prepared for the reception of crops by thorough working of the soil, usually bastard trenching. Unless the turf be badly infested with Coltsfoot, Sorrel, or Couch Grass it is dug in, for if there is any natural fertility in such soil it resides in the turf. The method adopted is to break it up with the spade and place it between the subsoil and the surface layer as the work proceeds. It is unlikely that the supply of manure will be equal to the demand, therefore the needs of those crops that require it should be met first. Onions, Potatos, Peas, and Beans require much more manure than the Brassica family. A medium that is too rich will produce loose Cabbages and Savoys, and leaves at the expense of flowers in Cauliflowers, and it is one of the causes of loose Brussels Sprouts. The succulent growth induced also renders those that have to pass the winter liable to suffer from the severity of the weather. Farmyard manure, in addition to supplying the elements of fertility, adds humus, which improves the physical condition of the soil. Humus is necessary in some form, therefore where manure is unobtainable, a substitute must be sought. There are many; decaying leaves will serve the purpose well, and may be incorporated with the soil now. Spent hops are useful, and can be obtained cheaply from a brewery. Leaves and tops from vegetable crops, if free from disease, should be placed to rot down, and be dug in as required. It should be borne in mind that these materials are not equal to manure. In all cases they should be supplemented by artificial fertilisers, applied nearer cropping time. It is difficult to convey the proper meaning by suggesting the weight of manure to apply to a definite area of soil. The different samples vary from wet to dry, and ratio of manure to straw. A dressing for crops that require an abundance of manure should be four inches thick. Half that thickness is sufficient for the less aggressive kinds. The work of digging should now proceed with all possible haste. If the soil is left as it falls from the spade the weather will exercise an ameliorative influence. Many of the war-time plots are as badly in need of lime as of manure. It is well known that to mix these two substances is bad practice, but they can be applied at the same time by spreading the lime over the surface after the manure has been dug in. It will gradually work down, sweeten the land, and not interfere with the proper action of the manure. Air slaked lime should be employed at the rate of one stone to 40 square yards. No attempt should be made to work the soil further until the middle of March, when it will benefit by being forked over. As it dries after that date, early vegetables may be sown. In the South of England it may be profitable to sow earlier, but in our dour Northern climate I have never known it to be so. *Geo. H. Copley, Horton Park, Bradford, Yorks.*

PARSNIP CANKER.

SERIOUS losses were caused to Parsnip growers last season through the disease known as Parsnip canker. The subject has since been investigated by the Food Production Department, and it has been found that the trouble is not caused by a special fungus disease, but is due primarily to the presence of superficial cracks which are formed in the shoulder of the Parsnip root during the growing season. The cracks are formed in great abundance when a spell of wet weather follows a dry period during August and September. In the case of Carrots and Turnips, somewhat similar cracks become healed over by the formation of a layer of cork, but the Parsnip root is unable to form this protective layer, with the result that insects, fungi, and other soil organisms easily gain entrance and set up decay. In the most badly affected districts the trouble has probably been aggravated by faulty culture, such as over-manuring and lack of lime. In order to reduce the amount of cracking to a minimum it is advisable (1) to select moderately good soil where liming has not been neglected, and (2) to sow late—the end of April rather than in February or March. A dressing of salt previous to sowing, 5 cwt. per acre on heavy soil and up to 10 cwt. per acre on light land, would also probably prove beneficial.

HOME CORRESPONDENCE.

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

THE DEFERTILISATION OF FLOWERS BY INSECTS (see p. 4).—The failure of flowers to get fertilised may be due to a variety of causes, as is well known to gardeners, but I do not recollect anyone having described the cause mentioned by Mr. Brown. The depollination of flowers, used by the same author, is the more correct term for the action of insects, because those flowers which are habitually self-fertilising take the earliest opportunity of placing the stigma in contact with the pollen, and after the pollen tube is well protruded and fixed, the depollination of the flowers would be difficult or impossible for insects, and fertilisation follows with certainty. There are, or were, many self-fertilising varieties of Pelargonium zonale and its hybrids with P. inquinans, also of other species, which regularly set fruit in the open or under glass. I have, for many years, watched the pollen-devouring Syrphidae, and they are numerous in individuals and species. Pollen is scarce in the highly developed flowers of Pelargonium in this country at all times, except from June to September inclusive. At other times only a few of the 5-7 antheriferous stamens produce pollen, or none at all. The filaments seldom even elongate, in species other than the zonal group, when the light and heat are not equal to the requirements of the plants. The pollen devouring insects are by no means confined to the Syrphidae, for other Diptera and beetles are also guilty. Most honey-bees are assiduous pollen collectors, and probably no sample of honey in this country is without pollen in its contents, while the proportion to honey is often large. When pollen is plentiful the Syrphidae fertilise the flowers as well as eat the pollen. I believe they are the principal insects which set the flowers of Veronica speciosa, its hybrids, V. Colensoi, V. pimeliodes, V. parviflora, and many others. Some years ago very diligent search failed to find pollen in the anthers of Saxifraga cernua, visited by Syrphidae and other Diptera, yet I collected individual grains of pollen, belonging to several other genera, on the petals and interior of the flowers, so that, in summer at least, the insects do not manage to devour all the pollen they carry away by design or accident on their feet and hairy bodies. *J. F.*

CUPRESSUS FORMOSENSIS.—In reference to Mr. Elwes' letter in your last issue, I may mention that this plant has not proved hardy at Aldenham, having been either actually winter-killed when about 4 feet high, or so severely injured by frost as to be rendered worthless. This, of course, is quite consistent with its having flourished in the milder climate enjoyed by my friends Sir Herbert Maxwell and Mr. F. R. S. Balfour, at Monreith and Dawyck respectively. I cannot believe that it would ever succeed at Colesbourne, where your correspondent Mr. H. J. Elwes has to contend with worse soil and climate than fall to my lot in Hertfordshire. Although a close, heavy clay like mine is one of the worst locations for all but a small minority of Conifers, it suffices for about half a dozen of the genus Pinus, such as P. sylvestris, P. Cembra, P. austriaca, which are pretty satisfactory with me. No Picea or Abies, however, can be depended upon to make good growth after their roots have got out of the mould in which they have been planted into the virgin clay, though for the first ten or fifteen years of their life they may show a promising appearance. Larches, if the ground round them be well broken up, and if (a very big "if" in our case) they escape serious injury from spring frosts, make useful enough timber, but I doubt if they would ever make very old or fine specimens. Indeed, I should neither get nor deserve the many interesting visitors whom I have the pleasure of seeing at Aldenham, if, as in many gardens, a pinetum were the principal feature. *Vicary Gibbs, Aldenham, Elstree.*

THE STORING OF APPLES.—I was interested in Mr. Beckett's remarks on p. 8 on the storing of Apples, and his comment on what he calls the ignorance of "the most elementary rules governing the keeping of fruit." He proceeds to attack the laying out of the fruit in single layers, remarking that, at Aldenham, he does not hesitate to "pile the fruit one on top of another, even to six or seven layers," emphasising, however, the necessity of their being perfectly sound, and bringing, as a proof of his case, the condition of the stray fallen Apples found during winter under the leaves. On p. 5 Mr. Jas. Hudson (of whom it is no disparagement to Mr. Beckett to say his advice is equally entitled to respect) states, in his remarks on the fruit room, "Do not let the fruits touch each other if it can be prevented," and again, "Be careful in handling, and take up each fruit separately, so as not to mark it." Thus we have two extreme views from sources both of which are entitled to the highest respect. Mr. Hudson, I admit, does not refer specially to Apples, as Mr. Beckett does, but, as his remarks are general, it may be taken that he includes that fruit. Alas! who shall decide when such authorities differ? Not the present writer, for he only follows from afar, but in view of the importance of the storing of fruit in the coming season I humbly beg to draw your attention to these two statements. *"Puzzled."*

SALVIA SPLENDENS VAR. PURPUREA.—In the *Gardeners' Chronicle* of December 1, p. 218, I drew attention to a ruddy purple form of Salvia splendens which had originated as a sport in the Cambridge Botanic Garden. Mr. Watson, of Kew, to whom I have forwarded a specimen, is well acquainted with it. It was sent to Kew from a Continental nursery, probably that of Messrs. Haage and Schmidt, and it is included in their catalogue as *S. splendens* var. *purpurea*. Mr. Watson informs me that it comes true from seed. The above information I give for those who may be interested. The origin of the Continental plant appears to be unrecorded, but as the same thing has appeared as a sport at Cambridge it probably originated in the same way. *B. Lewis Lynch.*

SOCIETIES.

GENERAL BULB GROWERS' OF HAARLEM.

We are informed that the following awards have been made by the respective committees of the General Bulb Growers' Society of Haarlem, Holland, during July, August, September, and October, 1917:—

FIRST-CLASS CERTIFICATES.

Gladiolus primulinus Scarletta, orange-red shaded lined red; Mrs. Velthuys; Mrs. Frank Pendleton, creamy-white shaded rose, with purple-red spots; Dahlias: sulphurea (decorative), sulphur-yellow; Vaunbaak (decorative), scarlet and orange; E. F. Hawes (Cactus), dark velvety purple; Velours d'Utrecht (single), dark velvety purple; Franz Ludwig (Paeony-flowered), clear mauve; and Pres. Washington (decorative), lilac-rose.

AWARDS OF MERIT.

Gladiolus primulinus Hesperia, salmon; G. p. Laetitia, salmon-rose; G. p. Salmonea, clear salmon-red; G. p. Jane, yellow with clear salmon markings; G. p. Maiden's Blush, salmon-rose spotted white; G. p. Sylphide, apricot, spotted clear yellow; G. Lena, purple, spotted brown; G. Lily Lehmann; G. Red Canna, dark purplish-red; G. Yellow Standard, yellowish green shaded lilac; G. Goliath; G. Mrs. K. Veltkuys; G. Prince of Wales; G. Aurora; G. Golden West; G. Mr. Mark; G. Liebesfeuer; G. War; G. Nora; Dahlias: Penserosa (decorative), lilac-rose; La Reine (decorative), milk-white; Renselaer (decorative), dark velvety-red; Moon (Paeony-flowered), dark brown; Melody (Collerette), clear purple-violet, collar pure white, from seeds; Cuneta (decorative), lilac and creamy-white; Mont Blanc (decorative), pure white, shaded rose; Adagio (Collerette), rose-violet, collar cream; Orange King (decorative), amber and old gold; Soleil d'Octobre (decorative), clear yellow; Purity (decorative), salmon-red and lilac with apricot-coloured centre; Rigida (decorative); Yellow Star (decorative), sulphur-yellow; Mrs. White (decorative), rose-carmine; Jo Ballego (decorative), orange; Salmon Queen (decorative), salmon; Dream (decorative), apricot with amber; Carmen Sylva (decorative), salmon shaded yellowish lilac; Brandaris (garden Cactus), clear yelow; Mea Vota (decorative), clear orange-shaded apricot; Ada Finch (Anemone-flowered), white and yellow; Marie Cats (decorative), pure white, centre shaded green; Mars (decorative), carmine shaded amaranth; Sandlower (decorative), dark yellow; Buff Queen (decorative), old gold shaded with cinnamon colour; Begonia surpasse Zeppelin, clear orange-red.

CERTIFICATES OF THE HAARLEM TRIAL GARDENS.

Anemone japonica Geante des Blanches; A. j. Loreley; A. j. Queen Charlotte; Dahlias: Burgemeester de Gyselaar; Brennende Liebe; von Hindenburg; Halley; Thorbecke (Paeony-flowered), pure yellow; Dream (decorative), apricot with amber; Artistique (decorative), rosy white; Porthos (decorative), lilac; Pink Perfection (decorative), salmon-rose; Louise Germ (decorative), yellow with apricot; Yellow Star (decorative), sulphur-yellow; Requiem (decorative), velvety-brown; Kalifsdochter (garden Cactus), carmine rose; Aria (Collerette), rose, collerette white; Melody (Collerette), purple, collerette white; Senate (Collerette), orange scarlet, collerette yellow; Velours d'Utrecht (single), dark velvety-purple; Crawley Star (Star), lilac rose and brown; Golden Glory (small-flowered), clear orange; White Pearl (decorative), pure white; Titanic (decorative), lilac; Worth Star (Star), rose.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

DECEMBER 6.—*Committee present:* The Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, D. A. Cowan, J. Cypher, A. G. Ellwood, A. B. Handley, A. Hanmer, J. Howes, A. J. Keeling, J. Lupton, D. McLeod, W. Shackleton, H. Thorp, and H. Arthur (secretary).

AWARDS.

FIRST-CLASS CERTIFICATE.

Cattleya Helen Langley The Knowle var. *Dusseldorfi Undine* × *Myra Peeters*), a large white flower with purple marks on the lip, from JOHN HARTLEY, Esq.

AWARDS OF MERIT.

Brasso-Cattleya Peerless (*Digbyana gigas* × *Fabia*), *Odontaglossum Gladys* (*cirrhosum* × *crispo-Herrenianum*), *Cymbidium Schlegelii Ashworthii* var., *Odontioda Mars*, and *Renanthera Clarkei*, all from R. ASHWORTH, Esq.

Cypripedium Formidable (*Mastersianum* × *Hellwigianum*), *C. Upert Alpha*, and *Laelio Cattleya Jacinth* (*C. Triomae* × *L. C. Pizarro*), from S. GRAPRIX, Esq.

Cypripedium Col. Hennah (*Leeanum Clinkaberganum* × *Antinoas*), from the Hon. ROBERT JAMES.

Laelio-Cattleya Bella alba Beardwood var., from Col. Sir J. RUTHERFORD, Bart., M.P.

Obituary.

OSCAR H. WILL.—In the course of an obituary notice of the late Oscar H. Will, of the firm of Oscar H. Will and Co., Bismarck, N.D., the *American Florist* (September 15, 1917) refers to the fact that it is due to Mr. Will's work in plant breeding that North Dakota and Montana are now able to produce between 10,000,000 and 20,000,000 bushels of corn annually, where 20 years ago they produced only a few hundred bushels. Mr. Will's experiments were based on varieties of corn which he obtained from the Dakota Indians, and from these varieties he raised a number of strains suitable for growing in the climate of the N.W. States.

CROPS AND STOCK ON THE HOME FARM.

OATS.

FROM a utilitarian point of view the Oat crop is ahead, even of Wheat, in the many uses to which it can be applied in normal times. As food for horses in hard work good Oats are the mainstay. For cows in milk no food is better than Oats when crushed for giving an increase of milk. For calves, too, Oats are valuable feed. For ewes and lambs they are valuable, as they increase the quantity of milk in the mother. When fed to poultry nothing is better for laying hens, and when ground whole for fattening chickens, and especially turkeys. Oats aid considerably in putting on flesh of high quality, particularly white in colour and fine in texture. Oats are also good food for pigs, either used whole or as meal. The straw is valuable as fodder for cattle; some farmers even use Oat straw in the place of Hay for horses, but I do not think it has the same value. The straw is also fed largely to store cattle in winter, and appreciated by the animals when harvested in good condition.

With good cultivation Oats yield heavily, although no kind of cultivation—no matter how good—can assure good quality of grain if the weather is unfavourable in the growing season or at harvest time. No cereal crop is so amenable to the effect of stimulative food as the Oat. Sulphate of ammonia sown at the proper time gives beneficial results, and for quite a moderate outlay. Nitrate of soda is probably more beneficial, but obtaining this fertiliser in bulk is now out of the question.

Where grass land is to be broken up in the spring Oats will give a better return than any other crop, certainly more than any other cereal. The roots of the Oat plant appear to revel in newly broken up grass, partly decayed, especially when wireworm is not present.

The yield of the Oat crop varies, like all cereals, according to circumstances, including weather and method of cultivation. The heaviest and best quality crops are, as a rule, obtained from early sowing, although even this method may be good or bad, according to circumstances such as situation, heavy and light soil, wet and dry sites. In the South of England some of the best Oats are grown from seed sown in February, especially on chalk soils, whereas if the same land was sown in April and a dry season followed, the growth would be poor and the crop and quality inferior. In chalk soils, therefore, an early start is imperative. With ordinary cultivation the Oat crop varies in its yield from 30 to 60 bushels per acre. When the latter figure is obtained, and that is not excessive—Oats of good quality weighing not less than 40 lbs. per bushel—it is easily seen that the Oat crop is remunerative at the present Government price of 43s. 9d. per quarter. Oats may be grown in succession to many other crops. Perhaps the best results are obtained after a good crop of Wheat, with the land clean and in good heart.

Following a Wheat crop, the ground can be ploughed early in autumn and a good surface tilth obtained. The Oats are then sown on a stale fallow in February without any further ploughing preparation. Good Oat crops may also be obtained after Potatos or Mangolds. Oats are also usually a success after sheep fed roots or Rape, especially when sown early, the ploughing being done quickly behind the sheep in March. The freshly ploughed land usually provides a good tilth for the seed.

As a rule Wheat is sown on Clover ley, although some prefer Oats for this rotation, because, when the leys are reserved for winter ploughing, it provides work for the horses when the fallows are too wet to be interfered with; the ley ground is then in good condition by the action of frost at the end of February or early in March to receive the Oats. The method of sowing Oats varies in different localities; some farmers still favour hand-sowing, and with marked success, but the broadcaster machine, which covers a space of 20 feet, has largely taken the place of hand-sowing, especially where the acreage is large.

Twenty acres can easily be sown in one day with two horses; one horse will drag one 16-feet machine on a flat surface. Many adhere to the drill, and for even distribution of the seed no method is better, but in some soils the necessary preparation of the land is not easy, and all too often, when the necessary tilth is obtained, rain falls, and sowing has to be deferred for days or even weeks. I am a strong believer in the Massey-Harris Cultivator, with a seed-box attached, which drops the seed evenly in front, and the action of cultivating the soil partly buries the seed at a uniform depth. How much harrowing is required after sowing the seed depends upon such circumstances as light or heavy soils, and of committing the seed in the various manners indicated. After the drill and cultivator once harrowing is sufficient if there is a good surface tilth. For reasons of space I must postpone further remarks on Oats until next week; in the meantime, do not let us overlook the extreme value of the crop. *E. Molyneux.*

LAW NOTE.

YEW POISONING OF ANIMALS.

THE death of grazing animals through eating the leaves of Yew trees has given rise to many law suits. It has been established for many years that where the tree stands on ground belonging to someone other than the owner of the field in which the animal was grazing, but overhangs such field so as to bring the branches of the Yew within the reach of the animal, the owner of the tree is liable for the injury done to the animal.

It is interesting to learn, however, from an article in *Stubbs' Gazette*, of December 26, 1917, that an exception to this rule of liability is to be found where the owner of the Yew tree is the landlord of the field in which the animal is grazing. This was established, it seems, in the Appeal Court last November. The plaintiff had taken from the defendant the lease of a field adjoining other grounds owned by the defendant. A mare was put out to grass in this field, and ate, with fatal results, of a Yew tree which overhung the field, but was standing in the landlord's garden. It was held that as the defendant could not prove that the Yew was not already overhanging the field when he took it, and that therefore he took the field with his eyes open, as it were, he must take the responsibility for whatever danger existed there.

It may be enquired whether a landlord is under no obligation, when he lets a piece of land, to see that there is nothing on his own land which will be injurious to that which he has let. It appears that the answer is in the negative; the contention being that a tenant must use his own eyes, and judge for himself when viewing the land before taking a lease whether or not there is anything on it, or in close proximity to it, which will be dangerous or noxious. If the plaintiff in the case referred to took a field with a poisonous shrub near it, he could not afterwards claim damages because the shrub caused injury to his mare.

Had the circumstances been slightly different there would have been another line of attack open to the plaintiff, and that is, that the tree was not overhanging the field when he took it, but became overhanging during his tenancy. In point of fact the plaintiff was not able to pursue this line, as he had no evidence to produce; but the opinion was expressed in the Court of Appeal—though not given as a decision—that probably, in the case of the danger having arisen after the lease had been taken, the defendant would have been liable for the death of the mare, in spite of his favoured position as the landlord of the plaintiff. It is a pity that the absence of evidence prevented the Court from coming to a decision on this point, as it would have proved a valuable precedent.

BASIC SLAG FOR TOMATOS: *C. W.* Basic slag is not quickly soluble, and would not be suitable as an ingredient for manure water. Your suggestion to mix the slag with the soil of the border should be adopted, applying it at the rate of 4 oz. to the square yard. Superphosphate is a quicker-acting phosphatic manure, or you may use bone meal with the compost.

FEEDING FORCED BULBS: *B. J.* The quality of the flowers in Daffodils, Hyacinths, and Tulips depends in a great measure on the cultivation the plants received in the previous year, and on the character of the weather. If the conditions were not favourable in the previous season the flowers would be of inferior quality, whilst small-sized bulbs often give small flowers. In the case of well-ripened bulbs of first size weak liquid manure may be given from the commencement of forcing, but it would not be necessary if fertilisers were added to the soil. In the case of Daffodils a much greater factor in success is attention in watering. There should be no stint of moisture in the atmosphere or at the roots of the plant. In the early days of Daffodil forcing great losses were sustained owing to insufficient supplies of root-moisture and air-moisture.

LICENCE FOR SEED EXPORT: *J. W. T.* Write to the Board of Trade, Export Department, Whitehall, London.

MOUSE: *Pomona.* The animal is an albino short-tailed field mouse or field vole (Arvicola agrestis).

PEARS BECOMING SOFT AND WOOLLY BEFORE RIPENING: *H. J. G.* There are a few varieties of Pears which go soft and rot inside before they are obviously ripe, notably Jersey Gratioli. These should be used when they are just off the hardness of unripe fruit. But if all your varieties behave the same, the complaint is not a familiar one. It may point to a lack of moisture in the soil in the latter part of the season, and you might try a few experiments on different rows or trees, as follows: (1) A good mulching with rotten farmyard manure; (2) a dressing of 4 lbs. of nitrate of soda or sulphate of ammonia (the former from choice, if obtainable) per square perch of land; (3) the same quantity of agricultural salt; (4) liberal watering when the fruit is maturing.

THE PROPAGATION OF CERTAIN HARDY TREES AND SHRUBS: *H. W.* Aralia chinensis and A. spinosa may be increased by seeds, but seeds do not always mature in this country. Both species may be propagated by suckers as well as by cutting the stout roots into pieces 3-4 inches long and planting them in boxes in gentle warmth during February or March. Daphne Mezereum is raised from seeds, which are best sown immediately they are ripe. They germinate freely in a moist soil out-of-doors. Cold, wet, heavy soils are not suitable. Hamamelis arborea and H. japonica Zuccariniana are generally increased by grafting in February and early March on well-established plants of H. virginica. Select well-ripened scions and place them in a warm case and syringe the shoots overhead occasionally. H. virginica, the common species, is raised from seeds sown out-of-doors. The two first named cannot be depended upon to come true from seeds, which often take a year or more to germinate. There is no book dealing exclusively with the propagation of hardy ornamental trees and shrubs, but the propagation of many of the species is dealt with in general works on hardy trees and shrubs.

Communications Received.—R. W. R.—Thanks for 2s., which has been placed in the R.G.O.F. box.—Sir F. W. M. O.—T. T. H.—W. M. F.—W. H.—R. P. B. A. H.—E. L. J. G. B.—Sir F. C.—Sir H. J. V.—R. A. M. J. A. P.—W. Golding.—R. I. L.

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CONTENTS.

ILLUSTRATIONS.

NOTES FROM KEW.—I.

UNDER the above heading, and by desire of the Editors, it is proposed to describe in the following series of articles some of the objects of interest to be seen at Kew in each month of the year, and thereby to satisfy, in some degree at least, the desire expressed by Sir Herbert Maxwell in the concluding article of his most interesting series of letters on "A Galloway Garden."

In January, even Kew is under the spell of winter. Plants generally are at rest, though every week produces evidences of the spring revival, and a walk through the grounds reveals, to the gardener especially, much that is interesting. Rhododendrons everywhere show promise of a great display of bloom. The weather last year was to their liking, plenty of rain and not too much sunlight and heat, affording just those conditions which these mountain shrubs enjoy. The plants in the Dell look exceptionally promising, and so do the Azaleas in the glade near by. Chinese Rhododendrons now occupy a separate area near King William's Temple, and they also flourished last year. It is, of course, too early to pass judgment on their horticultural qualities, especially with respect to hardiness. Many of the species are growing happily in the open in ordinary conditions at Kew, and they are worth watching by gardeners interested in what will most likely eventually prove the most valuable of the evergreen shrubs from China.

The most striking object in the Berberis Dell is the new flagpole, which is waiting to be set up where the old one stood. It is a magnificent "stick," as the Canadians call it. Popular feeling favours its erection in time to carry the flag of victory. Who will set it up, and how it will be done, are questions often asked.

Kew is a museum of living plants, and, like all museums, it contains a large number of objects that possess no apparent interest. Gardeners have been known to ask why so many poor-looking things are cultivated, and it is not always easy to furnish a convincing answer. Some plants carry a good character in their faces, but a great many possess no charm for the eye: their labels are the key to their virtues. Sir Joseph Hooker, when he was director, loved to walk in the gardens and to talk plants, and even he often failed to recognise the cultivated examples—their labels were needed to set him discoursing on their botanical or economic peculiarities. In his younger days he was somewhat prone to take a detailed interest in matters cultural, but he learned in time that the art of the grower is not acquired by collecting nor yet by studying plants botanically. Few botanists have ever shone as cultivators.

Collections of species representative of the genera and orders of the vegetable kingdom are grown at Kew, whereas in non-botanical establishments only attractive plants find a place. There are, for example, over a thousand species of Orchids in the living collection at Kew, not a quarter of which number would be passed as good garden plants. And this is more or less true of the other collections. There are fanciers who cultivate species and varieties in the spirit of the collector of postage stamps, and they appreciate the "botanical" plants that are grown at Kew.

Cape Heaths were an attractive feature in winter at Kew thirty years or so ago, when probably 200 species and hybrids were grown in the Cape House. They have all disappeared, partly because the plants are no longer in fashion, but chiefly, so far as Kew is concerned, because the art of growing them has gone. The collection was a good one sixty years ago, as is shown by an illustration in *Wanderings at Kew*, by P. H. Gosse, published in 1856, who speaks of the collection of Heaths of the Cape of Good Hope as being a very fine one. He also says that few plants were at that time more generally cultivated, and, taken as a whole, perhaps none were more beautiful. Tricky plants to grow these Heaths are, especially the hairy-leaved, hard-wooded species. In their best days only a few gardeners really succeeded with them, they are so exacting with respect to water at the root and ventilation. It is a pity they have lost favour, though they would have a poor chance in these times of hustle and high-pressure culture. A few species are still grown at Kew, chiefly such as those grown for market. The curator of Kirstenbosch, Cape Town, ought to get together a collection of those Heaths, which are the Rhododendrons of South Africa.

Hard-wooded greenhouse shrubs less than fifty years ago occupied a prominent place among favourite garden plants. It is surprising how many good things have entirely gone. In the 'eighties there was plenty of interest in indoor plants. Nurserymen were keen on them, many good private collections were kept up, and many visitors to Kew displayed a knowledge and love of them which rarely shows itself now. Mr. Elwes keeps the flag flying, and Sir Frederick Moore, of Glasnevin, and Mr. Lynch, of Cambridge, retain still a liking for a good indoor plant that is not an Orchid. Nurserymen cannot afford to stock plants that nobody wants, so they have ceased to bother about Aroids, Palms, Ferns, Dracaenas, Crinums, Marantas, Crotons, Dipladenias, Boronias, Aphelexis, Correas, and the many other champions of former days. Were it not for Orchids we might look upon indoor decorative gardening as having parted with all elegance and taste.

A tour through the plant houses at Kew even in January affords much enjoyment to those who have eyes to see and are not without knowledge of the vegetable kingdom. The great Palms, Cycads, Pandanads, and other striking representatives of tropical vegetation appeal to most people: the collection of Agaves, Aloes, Cacti, and

[*Photograph by E. J. Wallis.*

FIG. 11.—BUDDLEIA ASIATICA: FLOWERS WHITE. (See p. 22.)

other dry-country plants; the Ferns, of which the number of representatives is very large; and the less tropical trees and shrubs in the great Temperate House are all national treasures in their way, and ought to be as greatly prized as the collections in the British Museum, which have been the subject of discussion in the Press lately.

The Calanthes, Laelias, and Cypripediums in the Orchid department are good, though the fogs in the first week of the present month injured them. Ipomœa Briggsii, with its long sprays of bright crimson flowers, is the best climber in the T Range, as Brownea Crawfordii is the most showy of the big shrubs in the Palm House. Acacia dealbata, Luculia gratissima, and the Malayan Rhododendrons are the pick of the plants in flower in the Temperate House. A noteworthy winter greenhouse plant is Begonia Sanderae. It is in the way of B. semperflorens magnifica, but shorter, and the flowers are a glowing scarlet. This is a new hybrid, which was sent by Messrs. Sanders from the Bruges nursery, together with other precious refugee plants, soon after the war began.

There is always a show of flowers of some kind in No. 4, but January and August are its two "off" months. Veitch's winter-flowering Begonias (socotrana × tuberosa) were the glory of the house throughout December, and they are still good. The secret of their cultivation is to keep them free from mite, and this is easily done by sulphur fumigation, using for the purpose the vaporiser and preparation supplied by Mr. J. T. Campbell, Manchester. Until we were made acquainted with this mite destroyer these Begonias, as well as many other indoor plants, were often spoilt, the watering-pot, ventilator, or defective fertilisers being suspected. Begonia socotrana is still worth a place as a winter-flowering plant. So also is the Kew type of Primula sinensis.

Pycnostachys Dawei is good this year, but Coleus thyrsoideus is unhappy, whereas formerly it was one of the winter successes at Kew.

Buddleia asiatica (see fig. 11) is worth knowing as a greenhouse shrub. It is grown in pots outside all summer, and housed in October, coming into bloom in December. The flowers are in catkin-like racemes, white and deliciously fragrant. Another good winter plant is Columnea magnifica, as it is easily grown in a cool house or frame, makes shapely pot specimens in a year, and is in flower for about two months. Bomarea patacocensis is in bloom, its rope-like stems twining about the girders of the roof, from which the flower-heads hang like clusters of red Honeysuckle.

Last year some of the flower-beds and borders were devoted to Cabbages, Turnips, Beet, Kohl Rabi, Cauliflowers, and other vegetables, which were sold to the employees, who were thus provided with fresh, wholesome vegetables at reasonable prices. It is intended this year to grow more, and altogether about 6 acres of lawn and flower-bed will be ploughed or dug up and planted with vegetables. The whole of the flower garden in front of the Palm House will be used for a crop of Onions. *W. Watson.*

WART DISEASE OF POTATOS.

A VALUABLE SUMMARY of the trials of varieties resistant to wart disease is contained in the *Journal of the Board of Agriculture.** As is now well known, certain varieties of Potato are so susceptible to this disease that it is useless to attempt to grow them on land infected with the species of the wart disease organism, Chrysophlictis endobiotica. By a stroke of even-handed justice which nature by no means always displays, other varieties are entirely resistant to the disease. It is therefore possible to continue to use land infected with the disease for the cultivation of the Potato crop. Needless to say, the use of infected land, even when immune varieties only are cultivated, is always likely to lead to the spread of the disease, for immune varieties grown on infected land, although they have no disease in them, may well carry the spores of the disease on their coats. Mixed with the dirt on the lifted tubers, these spores will infallibly lead to an outbreak of the disease if they are planted with the immune seed. This indeed is one of the chief means whereby the disease has spread, and is spreading, and it will require well-considered and resolute action if the distribution of this disease throughout the whole of the country is to be prevented.

There is no need to insist upon the extreme importance of being prepared for such an eventuality, and evidently the existence of immune varieties enables preparations to be made. It is evident that if no risks are to be run provision must be made for there always to be available more than enough seed, of immune varieties, to plant the whole of the areas infected with the disease. This evidently means the working up of very large stocks of the best varieties of "immunes."

The sceptical may be inclined to ask, "How do you know that an immune variety will always remain immune?" Although it is not possible to return an absolutely confident answer to this awkward question, yet it is encouraging to observe that all the evidence so far obtained goes to show that immunity is an absolute, and not a relative, quality. An immune variety remains immune—so far as experiments go—even when it has lost vigour by having been grown in unsuitable soil or districts. Of early kinds, the number of immune varieties is none too many. They include AI (Sutton), a round, medium-sized, white-skinned, yellow-fleshed variety, a moderate cropper. Early Prolific, or Early Border, is similar to AI. Resistant Snowdrop (Dobbie), a kidney with white skin and flesh, a good cropper of fairly good quality, and Edzel Blue, a round, with coloured skin, white flesh; a good cropper and of excellent quality, recommended highly for gardens and allotments, but we believe that there are few, if any, tubers of this variety to be had at present.

Seedling No. 1 (Gardener) and Crown Jewel (Toogood) are other early varieties. Of second early varieties tested by the Board of Agriculture at Ormskirk in 1917 and found to be immune, the following may be mentioned:—King George, a heavily cropping variety, but not of the first quality; Great Scot, too well known to require description here, and later than King George; Sir Douglas Haig and Southampton Wonder, similar to Great Scot; The Ally, a heavy cropper of fine quality. Other second early immunes are Conquest, Mr. Breese, Border Queen, Snowball, and The Duchess.

The list of immune main crop varieties includes Abundance, and the numerous varieties of that type: Langworthy, What's Wanted, Golden Wonder, Rob Roy, The Lochar and Leinster Wonder, The Templar, several coloured rounds or ovals, such as Kerr's Pink Shamrock, White City, St. Malo Kidney and Majestic. A full list of these immune varieties is published in Food Production Leaflet No. 21, to be obtained free on application to the Board of Agriculture. Needless to say, those whose land is not in infected areas should refrain from planting immune varieties, except for seed-raising purposes, as it is important that all the available seed should be at the disposition of those whose land is infected with wart disease.

* November, 1917.

ORCHID NOTES AND GLEANINGS.

LAELIO CATTLEYA IRENSIS USK PRIORY VARIETY.

A FINE flower of this cross between Cattleya Iris (bicolor × Dowiana aurea) and Laelio-Cattleya bletchleyensis (C. Warscewiczii × L. tenebrosa) is sent us by R. Windsor Rickards, Esq., Usk Priory, Monmouthshire. It measures 5½ inches across, and the petals are 2 inches wide; the whole flower is compact in shape, and has a peculiar glow in the colour of the lip. The sepals and petals are light yellow with a slight veining of rose on the outer halves. The lip, which discloses C. bicolor in its short side lobes and pronounced median isthmus, and C. Warscewiczii in its expanded front lobe, is bright crimson, changing to light purple towards the crimped margin of the front lobe; the side lobes bear yellow lines from base to margin. The very stout column is white, tinged with violet on the upper surface. The flower resembles a very fine Cattleya Aclula in its general aspect, but Laelia tenebrosa gives depth of colour to the lip.

LAELIO CATTLEYA EUPHENO

MR. F. C. PUDDLE, gardener to W. H St. Quintin, Esq., Scampston Hall, Rillington, Yorkshire, sends a flower of a new hybrid between L.-C. Prince Leopold (C. chocoensis × L. cinnabarina) and Cattleya Dowiana aurea, which makes another useful addition to the hybrids with various shades of yellow and red. The flower, which is 6 inches across, has sepals and petals of orange colour, with a copper tint; the lip, with the side lobes well advanced before the column and recurved at the tips, is distinctly narrowed in the middle and only moderately expanded in the front lobe; the colour is blood red, with yellow lines from the base to the centre, where they merge in a yellow tint, running into the deep-red, front lobe.

THE WINTER ASPECT OF THE BUDS OF PLUMS.

THE systematic pomologist is always on the look out for some simple character which will be of use in diagnosing varieties. Such a character must obviously be constant and distinct, and if possible one that is available the whole year. In Plums the presence or absence of down on the stems is a useful guide, but a close examination shows that even this is not quite so constant as might be wished. Many of the varieties with "smooth" shoots, according to the pomologists, will be found to be slightly downy in parts, especially just above the axillary buds, and a minute examination will reveal a series which pass from the smooth to the downy in a graded order. The study of tree characters has never been given in this country the attention it deserves, and it is therefore to French authors we turn in a search for a character which will be more constant than downiness and one equally available during the winter. This will be found in the bud and its support. As a "telescoped" and undeveloped shoot the bud should not have had so many opportunities to vary as have such structures as the leaf and flower. This is quite borne out by the facts, so that we may say that the bud in winter state is the most constant character of any on the tree. It might be expected that all Plums of a similar character would show resemblances also in the buds, but this is not so. If we take the so-called Gages (see fig. 12), it will be seen that they differ among themselves in a remarkable manner. The prominent "support," which is the remains of the tissue carrying the vascular bundles to the leaf, is a character usually associated with this class, but it is by no means always sufficient to assist identification. In such varieties as Golden Esperen and Reine Claude de Bavay it is not more marked than in the ordinary Plums. In Coe's Golden Drop, Late Transparent Gage and Angelina Burdett it is very marked. The size of the buds shows a considerable difference, being very small in the Green Gage and Dennistoun's Superb, and large in Late Transparent and Oullin's Gage. The shape is perhaps the most striking feature. The short, rounded, conical forms, as in Count Althann's and Angelina Burdett, are usually associated with a neatly wrapped appearance that is, the bud scales are closely applied to each other. In other forms, as Early Transparent Gage and Oullin's, they are untidly wrapped, as the figure of the former well shows. The curved form of Golden Transparent is very characteristic and is not found, so far as I know, in other varieties. The direction taken by the bud, if closely applied to the wood or leaning away from it, is a very constant character, and varies only in that the lower buds on the shoot exaggerate this tendency a little. Coe's Golden Drop is a good example, while Late Transparent Gage shows the opposite extreme. The buds may also be downy or smooth, or in some cases the scales are edged with hair. Other points, such as the shape of the leaf scar, and the ridges left by the vascular bundles, will be noticed. Turning to other classes of Plums, the small conical bud of Pond's Seedling and the loosely wrapped and oval Belle de Louvain could not be confused in the winter state.

In the Damsons, too, the differences are equally marked: the round, downy bud of Farleigh Damson leaning away from the wood could not be confused with the smooth buds of Bradley's King and Prune Damson, while another downy bud, Frogmore Damson, would be readily picked out by its large size, vertical position and its prominent support.

Space will not permit the presentation of drawings of many types, but those shown will establish the fact that these bud characters are of some considerable utility for diagnostic purposes.—*E. A. Bunyard.*

THE EFFECT OF ONE GROWING PLANT ON ANOTHER.

FROM time immemorial gardeners have been convinced that certain plants injure others, and in many cases it is truly believed that the harmful effect persists in the soil for months, if not years. Thus many good gardeners are as convinced of the reality of "Onion sickness" of soil as they are of the reality of the Onion itself. This body of opinion has gradually crystallised and has led to the view that plants excrete something from their roots which is poisonous to other plants of the same kind, though not necessarily to plants of a different kind.

There are fashions in science as in other walks of life, and for a long period it was customary to regard the plant as being completely analogous to the animal. On this view it was only natural to expect a poisonous excretion, and consequently there was full harmony between the man of science and the practical man.

In more recent years, however, a good deal of doubt has been thrown on the idea of a poisonous excretion, and it has been shown that considerable difficulties arise in accepting this view. In a good grass field, for example, the plants are as crowded as they can be, and yet they show no signs of "sickness" or of being poisoned. If the soil is poor, they may, of course, go hungry, but that can be remedied by the addition of suitable fertilisers; there is nothing in the appearance of the plants to suggest that any other factor is concerned.

On the other hand, Dr. Whitney, the chief of the Bureau of Soils of the United States Department of Agriculture, published some years ago the view that plants do excrete a toxic substance, which, however, may be precipitated or otherwise thrown out of action by fertilisers. The fact, therefore, that fertilisers improve plant growth is not taken solely to show that they provide plant food, it is supposed that they also have this, and perhaps other effects as well.

This view was seriously contested both in England and in the United States, but, like other controversies carried on in a friendly spirit, it led to a great clarification of ideas, and to a considerable amount of work which has proved very helpful, and has resulted in a considerable advance of knowledge.

In the main, the British investigators have taken the view that there is no evidence of a persistent toxic excretion. This seems to be indicated by the Rothamsted experiments. At the present time the famous Broadbalk field is carrying its 75th successive crop of Wheat, and the plants look remarkably well, fully as good as any on the farm, and better than a good deal of Wheat in the district. The crop of Mangolds that has just been pulled is the 42nd in succession, and it as well above the average, and indeed has not often been exceeded during the whole period. Similarly, Barley has been grown for 57 years in succession, again without any sign of suffering. Leguminous crops, however, cannot be grown in this way, and after a short period they fail; so far as experimental evidence goes they are the only crops that will not grow year after year on the same land. There are observations to the effect that other crops fail also; it is said that Foxglove will make magnificent growth on the soil of a freshly cleared wood (provided the soil is suitable; *e.g.*, the clay patches on the Downs), for one year, but not afterwards; it is also said that Flax and Onions may fail if grown too often on the same land. But these are simply observations which, even if correct, might have some other explanation; no direct experimental evidence is forthcoming.

The view that plants excrete poisonous substances has been revived by the experiments of Mr. Spencer Pickering recently described in the *Gardeners' Chronicle*. Plants were found to suffer considerable diminution in growth if they received water that had washed part of the roots of another growing plant. The effect seems to be quite general; the washings from the roots of growing Mustard checked the growth of Mustard; grass checked the growth of fruit trees, and so on. Further experiments established the highly interesting point that these washings lost their poisonous quality very quickly, so that they would not necessarily affect the soil after plant growth had ceased. Thus the experiments are quite consistent with the Rothamsted field experiments just described.

Another set of Rothamsted experiments, however, appears to be more difficult to reconcile with Mr. Pickering's results. Dr. Brenchley has for some time been growing Wheat alone, weeds

FIG. 12.—WINTER BUDS OF PLUMS.

1, Golden Esperen Gage. 2, Coe's Golden Drop. 3, Late Transparent Gage. 4, Angelina Burdett. 5, Green Gage. 6, Dennistoun's Superb. 7, Oullin's Golden Gage. 8, Early Transparent Gage. 9, Golden Transparent Gage.

alone, and also Wheat mingled with weeds, and has obtained some highly interesting results.* When Poppy, Black Bent or Spurry were grown with Wheat they made less growth than when grown alone; the Wheat, on the other hand, made more growth per individual plant. This does not mean, of course, that Wheat should always be grown with weeds; the plant would have done better had no weed been present. Indeed, other plants grown without weeds did do better, but it suffered less from the presence of these weeds than it would have done from an equal number of Wheat plants. In these experiments Spurry proved more harmful than the others, its straggling habit smothering the young Wheat, giving it a bad check from which it never properly recovered. Charlock and Wheat settled down to some sort of equilibrium, neither gaining the mastery over the other.

So far as could be seen, however, the effect was solely one of competition for food, and it made no difference to the individual Wheat plant whatever its competitor was another Wheat plant or a plant of some wholly different order. The phenomena could all be explained

* *New Phytologist*, 1917, XVI, 53-76.

by supposing that the number of plants the soil could carry depended on the amount of plant food present in the soil and the amount of space available for growth; if the food and space are to be shared by many plants each individual will get a smaller share and will therefore make less growth than if there are fewer plants to participate.

At first sight this seems difficult to reconcile with Mr. Pickering's experiments, which would lead us to expect that a large number of plants would suffer not only from starvation but also from mutual poisoning, and therefore that there would be less growth not only individually but also collectively than when a smaller number is grown.

A way out of the apparent discrepancy may, however, be found. In another of Mr. Pickering's experiments plants grown in pots divided up into compartments so that each individual root was kept distinct from its neighbour made no better growth than plants grown in undivided pots where the roots of the different plants mingled freely. Thus the toxin produced by each individual plant does it as much harm as the toxin produced by its neighbour. Further, Mr. Pickering also found, working in open soil, that the total growth was the same whatever the number of plants (within certain limits as to distances apart), or, in other words, the weights of the plants were inversely proportioned to the bulk of soil available.

This is in full agreement with Dr. Brenchley's results, and it can be explained perfectly well without assuming the existence of a toxin, requiring only the recognition of the fact that the full crop-bearing capacity of the soil has been reached. If, with Mr. Pickering, we suppose a toxin to be present, we must further suppose that it is at least as harmful to the plant itself as to any other. This further assumption involves some possibilities which would lead to an interesting discussion, but it is safer and more profitable to await the further experiments which we may be sure the subject will call forth. *E. J. Russell*

TREES AND SHRUBS.

THE TURKEY OAK AS A PLANTATION TREE.

On p. 3, Mr. T. W. Bolas describes the Turkey Oak correctly when he says that it is very rapid in growth, and produces clean boles when the side branches are kept limited or within due proportion. Next to the common Oak (Quercus robur pedunculata) it is the most widely distributed in Britain, so far as my observations go. The species is relatively plentiful from the South of England to within three miles of the Moray Firth, and probably thrives further north. On the seashore its growth is limited, like that of all other forest trees, by the fierce gales from the sea in summer, when growth is being made. Nine miles from the coast, in river valleys, it forms quite as large a tree as the common Oak, and in private parks is preferred for its beauty, being of a dark green and amply supplied with branches. By the side of green lanes and ancient bridle paths in the South of England it forms stately trees 60 to 70 feet high, handsome and umbrageous, and there its seedlings may be seen of various heights, when not cut down. There are many fine trees in Surrey, and I have never seen the top in a decaying condition, such as is seen in hundreds of dilapidated old trees of the native species. Just how old the large Turkey Oaks may be it is difficult to say, but judging from their size I should say anything from 100 to 150 years; the species was introduced in 1735. Many of those to which I refer are growing on London clay, but where well drained the tree grows better and taller than I have stated. *J. F.*

THE TURKEY OAK AT MONREITH.

I am not aware of any reason for sharing the doubt expressed by Mr. Bolas (p. 3) as to the reasonable longevity of this tree. I happen to know the exact age of that one whereof I gave the dimensions on page 218, Vol. LXII. It stood beside a Beech, evidently of the same age, planted by my grandfather on his return in March, 1809, from the Coruña campaign, where he lost an arm, and neither tree shows any symptom of decay. *Herbert Maxwell, Monreith.*

LETTERS FROM SOLDIER-GARDENERS.

HORTICULTURAL DUG-OUTS.

I was pleased to read Mr. Peters' remarks on this subject on p. 222 of the issue for December 1 last. He gives his long experience as a proof of the correctness of my suggestions regarding the use of a dug-out for forcing. He has not been so successful with root and fruit storage. It is possible, as he will doubtless agree, that the conditions for successful storage could be arranged. I seem to harbour a belief that it could. Meanwhile, however, I bow to his experience. Mine, as I said before, are merely suggestions, but only experiment and experience can prove their value.

My other critic, *S. A.*, has, I think, misunderstood me. Perhaps that is through my careless writing and wording. I have not the advantage of having a copy of my article, and life out here is not conducive to the super-development of memory. Perhaps he has made the mistake of thinking that the curvilinear roofed iron dwellings I spoke of, I believe, as "French dug-outs," are really dug-outs. As a matter of fact, they are often built on the level, and are then barricaded with sandbags. In such conditions they can be completely dry and very warm; the ventilation and light are by no means ideal, but they could be made so but for a state of war. In my fourteen years' experience of hothy life in ten different counties I have seen good, bad, and indifferent hothies, and this I know, that if all had been as comfortable and as healthy as these iron buildings could easily be made in normal times, I think very few young men would have found it possible to complain.

I have not advocated—I do not advocate the erection of any form of dwelling which is insanitary in its full sense, but let *S. A.* remember that in normal times a "French dug-out" or a wooden hut may be made ideally sanitary. Don't mistake it; building material after the war will be dear, labour will be dear, and capital will be for a time timorously outlayed. These huts and other temporary buildings, being of no further use for Army purposes, will probably be cheap. I have yet to learn that brick or stone are essential to health or to comfort, though it probably may seem so to many rural and urban district councils.

Mistake me not, *S. A.* I have no intention after the war of digging myself in, even though I am an enthusiastic Sweet Pea grower and an advocate of deep tillage. I always contrive to keep my head above ground level. Soon after my return, I hope to "buy me a house," and it is not going to be a French dug-out nor a wooden hut, but some form of these structures is going to be in the vicinity to be used as a "sanctum sanctorum" where I can reply to my critics and welcome my friends, and I hope the two will be synonymous.

If, however, it happens that I am engaged in work which demands the comfortable housing of men, I shall continue to ensure their best comfort at a minimum of expense. Is that retrogressive? It is not my idea of retrogression. I must give *S. A.* the credit of misunderstanding me or myself the discredit of not explaining myself sufficiently well. *William F. Bowles, B.E.F.*

The Week's Work.

THE KITCHEN GARDEN.

By F. Jordan, Gardener to Lieut.-Col. Spender Clay, M.P., Ford Manor, Lingfield, Surrey.

Onions.—Seeds of Ailsa Craig, Premier, and Cranston's Excelsior Onions should be sown at about this date under glass in a temperature of 55° to 60°, to obtain large bulbs. To produce Onions for exhibition purposes, rich, deeply trenched ground is necessary, but whether the bulbs are intended for exhibiting or for home use, the utmost attention should be given to this important crop, owing to the restrictions placed on the importation of this vegetable. For spring sowing, James' Long Keeping, Veitch's Main Crop, and Brown Globe are all good varieties, and much may be done to accelerate the crop by raising these varieties under glass at the beginning of next month in cold districts, and especially where mildew or the Onion fly is troublesome, and planting them out-of-doors in April.

Cucumbers.—Make a sowing of Cucumber seed at once in 3-inch pots, plunging the latter in a bottom heat of 75° to 80°. When the plants have made three leaves, transfer them carefully to 5-inch pots filled with a light compost consisting of loam, leaf-mould, and sand. Place a small stake in each pot to make the plants secure, and plunge the pots in fermenting material arranged in a light position near the roof-glass. Maintain a warm, moist, growing atmosphere, and let the night temperature be 65 to 70°, according to the weather. Water the roots carefully.

Salads.—Salads are getting scarce, but a daily supply of Mustard and Cress is easily obtained, and these plants furnish a salad that is always appreciated. Sow the seeds fairly thickly on fine soil, pressing them firmly into it. Water the soil and germinate the seeds in a moderate temperature, excluding light until the seedlings appear. Chicory may be forced gently in a Mushroom house. Endive may be blanched in any cool, dark place, or in the pits or frames in which the plants are grown.

Winter Crops.—Autumn-planted Cabbages have suffered in many places from excessive rains, which have checked growth considerably, and favoured the spread of slugs. At the first opportunity, when the weather is mild, loosen the soil about the plants of all winter crops.

Cold Frames.—Such plants as Cauliflowers, Lettuce, and Endive which are growing in cold frames require careful attention, keeping the soil stirred between the plants and the ground clear of weeds, to prevent damping. Admit air on all favourable occasions, increasing the amount gradually.

General Remarks.—Make sowings in pans or boxes, filled with fairly good soil, of Tomato Sunrise, Cauliflower Magnum Bonum, Brussels Sprout Dwarf Gem, Lettuce All the Year Round, Cabbage Sutton's Earliest, Leek The Lyon, and Broad Bean Green Windsor. The Broad Beans may be sown in 4-inch pots, to be planted out later. Seeds of this vegetable may also be sown in the open in favourable districts on warm borders. Every effort should be made to have plants in readiness to fill all available spaces as soon as the condition of the weather permits. All available labour should be concentrated on getting pits, frames and ground that will be needed ready in time for early planting. Sowings of the vegetables named should be regulated according to the date when young plants will be required in the spring.

THE HARDY FRUIT GARDEN

By Jas. Hudson, Head Gardener at Gunnersbury House, Acton, W.

Mulching Fruit Trees.—Mulching should consist of a light surface dressing with matured farmyard or stable manure. It should be broken somewhat finely and spread around the trees.

Excessive mulchings encourage lank growth. Mulching is more necessary for light soils than for heavy ones, and for well-drained soil than for low-lying or wet land. Fruit tree borders that are sloping or narrow need careful mulching.

TOP-DRESSING FRUIT TREES.—When adding new loam to the roots of the trees, first carefully remove the surface soil around the roots for a fair distance away from the stems, especially in the case of trees that have for some years borne heavy crops of fruit. This process also supplies an opportunity of giving the trees a little artificial manure in which there are good percentages of both phosphates and potash. In using such a manure, however, do not exceed the proportions recommended by the makers. Many estates can supply their own requirements of loam without any difficulty.

FRUITS UNDER GLASS.

By W. J. GUISE, Gardener to MRS. DEMPSTER, Keele Hall, Newcastle, Staffordshire.

EARLY PEACHES.—In most gardens the early Peach houses will be closed for forcing later than usual this year, and, however brief the respite, the trees will benefit greatly by the longer period of rest. The flower-buds on these early trees are swelling, but before the flowers open fumigate the houses to destroy green and black aphides. If the one fumigation is efficient, it should not be necessary to fumigate the house again until the fruits have set. Peach and Nectarine trees will only submit to gentle forcing, and until the flower buds show colour the temperature of the house should not exceed 45° at night, with a rise of 10° by day. During the flowering period maintain sufficient fire heat to keep the thermometer at 50° by night; during very cold weather a few degrees lower will cause no harm, but excessive fire heat will result in the trees casting their flowers. Admit air on all favourable occasions, and if the top ventilators are open about one inch at night until the flowers begin to fade, so much the better. Maintain a dry, buoyant atmosphere, to ensure the pollen being dry and readily disseminated. When the trees are in bloom, touch the flowers lightly at midday with a rabbit's tail tied to a cane. Pollinating the blooms in this way is essential in the case of early Peaches and Nectarines. Immediately the flowers are set, light syringings with tepid water twice daily, according to the weather conditions, will assist the embryo fruits to swell.

EARLY VINES.—In starting early vineries, a night temperature of 50° to 55° is sufficient, with a rise of 10° during the day before admitting air, but this is not necessary till the buds are on the move. Maintain a moist atmosphere to assist the vines to start into growth freely, syringing the houses twice daily, according to the weather, and always using tepid water. Pot vines which were started last month are advanced sufficiently for the shoots to be thinned, but this must be done with caution, or shoots containing the embryo inflorescences may be removed. If the pots are plunged in hot bed material the dung should be renewed before the heat gives out. Regulate the work of syringing and damping according to the weather, for an unduly moist atmosphere is not conducive to healthy foliage. Pinch the side shoots two leaves beyond the bunches, and allow the leading shoot to continue growing for the present. Examine the pots for water, and when moisture is necessary, afford sufficient to thoroughly wet the roots, using tepid water, and tepid liquid manure when the latter is used. Tie the lateral shoots by degrees to the trellis, or they may snap at the base. Maintain a night temperature of 65°, with a rise of 10° during the day before air is admitted.

CUCUMBERS.—To meet the demand for early Cucumbers, sow seeds at once singly in small pots, and plunge the pots in a bottom heat ranging from 75° to 80°. The plants may be repotted once, although this is not necessary if plenty of heat is available. Pines are no longer grown in these gardens, and we find the Pine-pits well adapted for growing Cucumbers. These pits have an excellent supply of hot water pipes, and there is no difficulty in maintaining a night temperature of 65°, with a rise of 15° by day. A hot bed of stable litter and leaves is placed on the stages, the mound of soil, composed of fairly loam, well decayed manure, and a little charcoal, being placed at equal distances along the bed. When the soil is warm, the plants are set out. A moist atmosphere is promoted by syringing the plants and their surroundings twice daily, and once only on dull days.

PLANTS UNDER GLASS.

By F. HARRISS, Gardener to Lady WANTAGE, Lockinge Park, Berkshire.

ROSES IN POTS.—Batches of Roses may now be safely introduced into a slightly heated temperature as required, selecting plants which have made fairly strong, well ripened wood. Before placing them indoors, see that the drainage of the pots is quite clear. Cut back all weak growth, and if necessary slightly cut back the flowering wood. Remove all useless wood from climbing varieties, and tie the flowering growths neatly to stakes. Forcing by the excessive use of artificial heat must not be attempted, as this will cause the flower stems to be weak, and of little use for decorative purposes. If forcing is necessary, make use of the sun's rays by closing the house in the middle of the day, but open the top ventilators a little during the night. When the flower buds begin to open, the roots must be watered with a concentrated fertiliser and soot water alternately. Roses require plenty of fresh air when the weather is favourable, but cold draughts must always be prevented, or mildew will attack the foliage. As a precaution against aphis, fumigate the house occasionally, and should mildew appear, dust the foliage with flowers of sulphur.

CYCLAMEN.—Seedling Cyclamens which were raised in the autumn will now be in need of a shift. They may either be potted into small pots, or pricked out into pans or boxes. There will be less likelihood of a check if the latter method is adopted. A light, sandy compost should be provided, and the pans must be efficiently drained. Keep these young plants growing slowly in a moist atmosphere near to the glass. A night temperature of about 50° will suit them, but the temperature may be allowed to rise 20° higher during the day by the judicious use of sun heat. The old plants which are flowering must be carefully watered, using stimulants of moderate strength until they are in full flower. To prolong their season of flowering, keep the atmosphere cool and dry, admitting plenty of air when outdoor conditions are suitable.

CLEANING PLANT HOUSES.—To keep plants in a healthy condition it is necessary that their surroundings be perfectly clean. Before the busy season arrives the glass and wood work inside and out should be thoroughly cleansed with soapy water. The materials on the stages, too, should receive attention. When arranging the plants again on the stages, see that they are not placed too closely together. Climbing plants may now receive the necessary pruning or thinning, and be again tied neatly to their supports. When this is done, remove an inch or two of the surface soil from the rooting area and replace with fresh materials.

THE ORCHID HOUSES.

By J. COLLIER, Gardener to Sir JEREMIAH COLMAN, Bart., Gatton Park, Reigate.

DENDROBIUM.—The flower buds of many Dendrobiums, including both species and hybrids, are showing, and the flowering season may be extended by removing some of the more forward plants from their resting quarters to a house having a slightly higher temperature. A careful selection is necessary, both in regard to variety and the condition of the plants. Only well rooted and thoroughly ripened specimens should be chosen, and preference should be given to hybrids of D. nobile and D. aureum. Having selected the plants, they should be given only sufficient water at the roots to keep the pseudo bulbs plump, for if moisture is too liberally applied, it will cause many of them to start rapidly into growth, and the flower buds will turn yellow and drop, or the plants will produce flowers of inferior quality. They should be first placed in a house where the temperature is a few degrees warmer than that in which they have rested, finally transferring them to the stove or warm division. Unless early flowers are especially desired, forcing should not be hurried, only sufficient warmth should be employed to cause growth to develop gradually. With this treatment the blooms will be larger and of greater substance than when much fire heat is employed. Keep a sharp look-out for slugs, or they will damage the flower buds as soon as the latter begin to develop. Traps of damp bran or Lettuce leaves should be placed about the stages near the plants, and the pests searched for at night time and in the early mornings. Plants of tall growing species, including D. moschatum, D. fimbriatum, D. clavatum, and D. dixanthum, should still be resting, and remain dormant for the next two months. D. Dalhousianum should be grown in the warmest house at all times, and should not be kept excessively dry at the roots during the resting season. Afford the plants sufficient water to keep the stems and leaves fresh and plump, for if these plants are kept too dry during their period of rest, the next season's growth will often be deficient in strength.

THE FLOWER GARDEN.

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

SWEET PEAS.—Sweet Peas can, as a rule, be utilised in the furnishing of the flower garden proper, rather than, as in past times, taking up space in the vegetable quarters. There are many ways of utilising Sweet Peas. A row of a white sort is very pleasing, or we may have blue tones, or blue and yellow with Canary Creepers (Tropæolum canariensis) intermixed. Or pink, either all pink or associated with colours that go with pink, or, last of all, a mixture of Sweet Pea colours. It is many years since I employed Sweet Peas in the flower garden, and their employment was stopped solely because of high winds, which wrecked them when at their best. To have strong plants it is worth the labour to sow thickly in cutting boxes, the seedlings to be transferred singly into 4-inch pots, when large enough for the shift, growing them slowly in the cool, and pinching the tops to ensure several shoots from each. Only the stronger growing sorts should be chosen, such as Dobbie's Cream, King White, Edrom Beauty, and Edith Pearson. Sow at once, and cover the boxes with some mouse-proof material until the plants are safe from the attention of these animals.

SNOWDROPS.—I incline to the belief that the masses of common Snowdrops which we established here are constantly being renewed by seedlings, the older plants dying after a time. There are comparatively few clumps of one variety, and any noteworthy sort that attracts one's attention invariably disappears. It is therefore of importance to add new material to the surface to give seeds the best chance to germinate, while it increases the vigour of corms that have become established. Any very light soil passed through a fine meshed sieve and spread thinly and evenly over the ground occupied by the Snowdrops suffices, and, of course, there is no time to lose, the earlier forms being soon due above ground. Some years they appear with the New Year, but this is a late season. Strong growing species, such as Galanthus Imperati and G. pheatus, may instead of soil have a thin surfacing of rotted manure applied.

TRIMMING IVY. This is not the best time of year to trim Ivy, but I find that the work can be done now without the labour entailed causing any derangement of work in general. It is a great mistake to miss cutting Ivy annually, apart altogether from the unsightliness that follows neglect. But it is not important to cut close in, so long as the shoots that break away from the main body are cut, and those which grow beyond bounds at the sides of windows, doorways, and the tops of walls. Much saving of labour is effected by spreading canvas sheets to catch the clippings.

LAWNS.—A final clean up of lawns on which leaves, sticks, and other rubbish has accumulated recently may be made after a period of wet, when other work is at a standstill. Owing to the very open weather subsequent to the stoppage of grass-cutting in autumn, our lawns are very rough, and it will be necessary to put a heavy roller over them as soon as they are in condition to bear it.

EDITORIAL NOTICE.

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.*

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

Special Notice to Correspondents. — *The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.*

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

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*

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 38.9.

ACTUAL TEMPERATURE:

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, *Thursday*, January 17, 10 a.m., Bar. 29.5, temp. 37.5, Weather Snow Fall.

The 1918 Potato Crop and State Purchase.

The announcement of the arrangements made by the Ministry of Food for the disposal of the 1918 Potato crop are opportune, for it indicates to all concerned that the Government is prepared to encourage the largest possible production of Potatos. This attitude is undoubtedly wise, for although the bulkiness of the Potato crop makes the task of transporting it extremely difficult, nevertheless it is the crop which of all others produces the largest amount of food per acre. Furthermore, there should be ample time between now and the lifting of the crop for the perfection of arrangements already being made whereby large quantities of Potatos may be dried and milled and rendered available for use in bread making. In order to encourage the growing of Potatos on the largest possible scale, the Food Controller has announced that he is prepared to enter into contracts with farmers for the delivery as and when required of approved varieties of main crop Potatos at the following prices (f.o.r. or f.o.b.): November 1 to January 31, England and Wales, £6; Scotland, £5 10s.; February 1 to March 31, £7 and £6 10s.; May 1, 1919, to end of season, £7 and £6 10s.

These terms will only apply to acreages in excess of the total acreage of the farm in 1914, and they will only be granted if the 1918 acreage under Potatos on a given farm is not less than that of 1917.

A further condition lays down that any conditions with respect to spraying, harvesting, or pitting enforced by the Board of Agriculture, must be duly followed out. Those who wish to grow on contract under these terms must apply for contract forms between February 1 and May 1, 1918, to the Director of Vegetable Supplies, 18, Upper Grosvenor Street, London, S.W. 1.

Having defined the means whereby it is hoped to maintain and increase the area under Potatos, the Food Controller proceeds to deal with the crop as a whole. As from November 1, 1918, he will take over all the crops except those grown on holdings containing less than one acre of Potatos and those grown for own consumption or for experimental purposes. The price at which the crop will be taken over will be regulated by the size and quality of the crop, but will not be less than the following scale (for f.o.r. or f.o.b. prices):—

November and December: England and Wales, £5; Scotland, £4 10s.

January and February: England and Wales, £5 10s.; Scotland, £5.

March and April: England and Wales, £6; Scotland, £5 10s.

May to end of season: England and Wales, £6 10s.; Scotland, £6.

Growers will have the right to retain any seed they may require for their own use.

It is not at present contemplated to take over or fix prices for the 1918 crop before November 1. Should, however, the food situation require the fixing of maximum prices, the prices will not be less than the following:—

July 1 to 15, £14.
July 16 to 23, £12.
July 24 to 31, £10.
August, £8.
September to October, £7.

The corresponding arrangements for the Irish crop will be announced later.

The object in discriminating between the Scotch crop and that grown in England and Wales is to discourage the consumption of Potatos grown in the neighbourhood of the principal consuming areas.

With the scheme before him the grower should be in a position to judge what part of his acreage he should devote to early and what part to late Potatos. In forming that judgment he will be guided by his estimate of demand, the suitability of his soil for early varieties, and his general cropping programme. Although each person must decide for himself, we for our part hold the view that on patriotic grounds, at all events, skilled growers should prepare to plant—provided their soil is reasonably early—a considerable breadth of second early varieties. For it is important in the coming year that there should be a large supply of Potatos and that the supply should begin to come in in large volume as early in the season as is possible.

The National Rose Society.

At the annual meeting of the National Rose Society held on Tuesday last at the Holborn Restaurant, the President, Mr. E. J. Holland, in moving the adoption of the report of the Council, stated that 210 new members had been added to the Society in the past year.

The usual spring and summer shows had not been held, but through the courtesy of the Royal Horticultural Society a special class for seedling Roses had been provided by the Society at one of the R.H.S. fortnightly meetings in July, and a modest and unpretending show, on a non-competitive basis, was held in the Drill Hall in the autumn. The publications issued by the Society during the year had consisted of *The Rose Annual* and a revised list of Roses, with instructions in pruning. The Council had decided to form a library for the use of members, towards which a few books had already been purchased.

The programme of the Society for 1918, said Mr. Holland, had been carefully and anxiously considered by the members of the Council, and it had decided to arrange a series of shows of modest dimensions, so as to continue the work in a quiet way. There would be a spring show at the Drill Hall on May 7, a show at Regent's Park on July 1 in aid of the Red Cross Funds, a special meeting on July 16 for the display of seedlings, and an autumn show at the Drill Hall on September 10.

He invited discussion on this programme. The Council had ascertained that in three cases the shows would involve no preparation, while in the case of the summer show the proceeds would go towards an excellent object. Mr. H. R. Darlington seconded the motion, observing that he had at first been against holding any shows in the current year, but finding that the shows at the Drill Hall would involve no expense or preparation, while in the case of the summer show use could be made of accommodation provided for other purposes, he felt unable to press the objection. Mr. Frank Cant questioned the policy of holding the proposed shows, while Mr. Pemberton, who was supported by Mr. Burnside, moved an amendment asking the Council to reconsider its proposal for the summer show and to hold it in a hall, instead of at Regent's Park. The recommendation of the Council, however, was supported by Mr. Burgess and Mr. George Paul. The amendment on being put to the meeting was lost by a large majority, and the report of the Council adopted.

The treasurer of the Society, Mr. Preston Hillary, made a statement as to the finances, and moved a resolution, which was carried unanimously, suspending the operation of certain rules, in order to enable the Society to make a contribution to the Red Cross funds. He mentioned that, after purchasing £1,000 war loan, the Society had a balance at the end of the year of £321.

Mr. H. R. Darlington then stated that the Council had decided to award two Dean Hole Medals, one to Mr. E. B. Lindsell and the other to their president, Mr. E. J. Holland. The Dean Hole Medal was the highest honour the Society had it in its power to confer, and it was awarded for good work done in connection with the Rose. During the twenty-one years from 1890 to 1911 Mr. Lindsell had won the Amateur Cham-

pionship Cup no fewer than nineteen times and had carried off the Jubilee Challenge Trophy given at the Provincial Show on twelve occasions. These were feats that were unique in the annals of the Society. Contest in various forms had an ennobling influence on those who engaged in it, but the peaceful contests of their Society involved long years of preparation and many "days of fresh air in the wind and the sun," that were no less delightful in the memory than pleasant and healthful in their pursuit. The medals he had the honour of presenting, on behalf of the Society, would remind them of those hours of recreation, and also of the great Dean, first president of their Society, and the Homeric conflicts he waged with Mr. Newdegate, of Asbury, before the Society was formed in the early seventies. Mr. Holland had not only won a high place as an exhibitor, but had devoted much time and work to the service of the Society. The first recipient of the Dean Hole Medal was Mr. Pemberton, one of Mr. Lindsell's most serious opponents, and one of the very few who had ever wrested from him the Amateur Championship; it was very satisfactory to see him amongst them on that occasion.

NATIONAL DAHLIA SOCIETY.—The annual general meeting of the members of the National Dahlia Society will be held on Monday, the 21st inst., at 35, Wellington Street, Covent Garden, the offices of the British Wholesale Florists' Federation.

SOCIÉTÉ NATIONALE D'HORTICULTURE DE FRANCE.—The administrative council of the Société Nationale d'Horticulture de France, finding it impossible this year to arrange for the usual annual elections, has decided to extend for one year its own powers, and the powers of the various administrative committees. The committees will be entitled to co-opt additional members, should such a course be rendered necessary by the resignation of existing members or by any similar cause.

THE SELBORNE SOCIETY.—Steps are being taken to incorporate the Selborne Society, and to widen its objects, so that it may not be hampered in its efforts to bring home to the public, more especially through its lectures, the great value of science to the community. Existing members will be registered upon demand without entrance fee or re-election, and diplomas will be granted to lecturers, guides and teachers who satisfy the Society that they are qualified to carry on its work. Full particulars can be obtained from 55, Avenue Chambers, W.C. 1.

BREAKING-UP GRASS LAND.—Under the above heading, the *Daily Telegraph* reports that, writing to SIR JOHN GRANT LAWSON, the President of the Board of Agriculture (Mr. PROTHERO) says: "Where the tenant's agreement or lease either prohibits him from breaking up grass land or makes him liable for a money payment if he does so, an order under the regulations enables him to break up the land without becoming liable to pay any penalty or to bear the cost of putting down to grass again. If the owner suffers any direct or substantial loss, he is entitled to apply for compensation to the Defence of the Realm (Losses) Commission."

UNIVERSITY LECTURES.—In connection with the work of the Imperial Studies Committee of the University of London, a course of ten public lectures on "Some Biological Problems of To-day" has been arranged, and will be held at University College on Mondays, at 4 p.m., beginning January 21. The following are particulars with regard to the first five lectures:—(1) "The Problem of Food," by Professor W. M. BAYLISS; (2) "War Bread and Its Constituents," by Professor F. G. HOPKINS; (3) "Accessory Food Factors (Vitamines) in War Time Diets," by Miss E. MARGARET HEMP; (4) "Alcoholic and other Beverages," by Professor A. R. CUSHNY; (5) "The Possibilities of Increased Crop Production," by Dr. E. J. RUSSELL, F.R.S. The lectures are open to the public without fee or ticket.

FIG. 15.—DAHLIA CACTUS VAR. GENIUS BRYNDIR VAR.

(See "Words of Merit," by R.H.S. Orchid Committee, p. 29.)

COMMERCIAL FERTILISERS FOR ROSES.*—The conclusions reached by Mr MUNCIE as the result of a long series of tests are that the nitrogen required by Roses is best supplied either by farmyard manure or by green manuring; that acid phosphate should be used generously, either at the rate of 4-8 tons to the acre in the nursery or in compost with soil at the rate of 10-30 lbs. per 100 cubic feet. By the use of acid phosphate in the quantity prescribed, the author obtained an increase of blossom of 4,100 flowers from 1,000 plants, whence it follows that the cost of the fertiliser is insignificant in comparison with the increased value of the crop. Rose growers who have not hitherto used acid phosphate should take note of these striking results of application in more propitious times.

CHINESE CABBAGE.—According to a note in *New Plant Introductions*,† the Pe-tsai or Chinese Cabbage (Brassica pekinensis), trials of which have been made in this country, should be planted in autumn. If sown in spring it bolts. It is recommended to sow in July and to harvest after the first frost. If the green leaf tips are cut off before cooking it will be freed from its penetrating Cabbage odour. A variety (No. 24,052A in *Inventory of Seeds and Plants Imported July 1-September 30, 1917*) is described as being particularly fine, very white, of mild and sweet flavour, and weighing up to 10 lbs.

PUBLICATIONS RECEIVED.—***The Mistletoe: Its Life-History and Associations with Primitive Religion, Folklore, and Superstitions.*** By Sir Daniel Morris, K.C.M.G. Reprinted from the *Bournemouth Guardian*.—***The Land.*** By John Galsworthy. (London: George Allen & Unwin, Ltd.) Price 6d. net.

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* *The Use of Commercial Fertilisers in Growing Roses.* By F. W. Muncie. Univ. of Illinois Agri. Exp. Stn. Bull. 196.

† *New Plant Introductions*, 1917-18. Bureau of Plant Industry, U.S.A. Dept. of Agriculture.

ON INCREASED FOOD PRODUCTION.

EARLY SPRING-SOWN BRASSICAS.

THE severe winter weather which prevailed last year destroyed many of the spring Cabbage plants in this neighbourhood, and in consequence there was a great shortage, and prices for a time ruled high. Cabbages that were planted direct in their permanent quarters and in sheltered sites came through fairly well, but those in the seed-beds were ruined. To augment the supply of plants I adopted a plan which was an entire success and which may also be followed in the case of early Cauliflowers and Brussels Sprouts.

A deep cold pit which had been previously filled with freshly fallen leaves and prepared for early Potatos was planted about the end of January, at the same time drawing two shallow drills between each line of Potatos, into which were thinly sown seeds of the above-mentioned Brassicas. The seed germinated splendidly, and the conditions suited the young plants admirably. In due course, as the rough leaves were formed, the seedlings were pricked out in skeleton frames, and gradually hardened off, making fine plants for setting out in April. The method, which I intend to repeat, has much to recommend it, and it is a great saving of labour, there being no boxes to clean, crock, and prepare, no watering, labour entailed in shifting saved, and lastly, the plants lifting much better and more easily, less care being needed than when the roots are closely confined in boxes. They were all ready to shift before the Potatos made much growth, and the loosening of the soil benefited the latter crop *E. Beckett, Fota Gardens, Queenstown*

PARCHED PEASE.

HAS anyone a recipe of the mode of preparing these? I take it that the treatment is somewhat that of baked Beans, for which I have no satisfactory procedure. Certainly if parched Peas are as good as the baked Beans which one gets in U.S.A., they ought to be worth resuscitating from antique cookery books. *H. E. D.*

DRIED PEAS.

THE Mangetout Dwarf Breton Pea (sans parchemin hâtif nain breton) is excellent in its dried ripe state. I have lately tried it as pease pudding, in croquettes made thereof, and also whole in stew and soup. It is of excellent flavour and melting consistence; its thin skin or pericarp is not obtrusive, in fact, it disappears in the cooking. The strain I have had for several years is a good 3 feet in height, and should not be sown or planted too thickly, as each plant makes a bush of growth. The flowers are white, and the production of pods very free over a considerable period. The seeds are rather small, yellow, and round, but they swell well, and the great productivity discounts a loss in size. It is rather liable to mildew, for which a spraying or two with 1 per cent. lime-sulphur seems to do good, as with other Peas. For mangetout purposes only pods with thin, papery shucks should be kept for sowing; with about four years' selection all hard pods seem now to have been eliminated. I think that the variety is worth considerable cultivation. After all, what is a better breakfast than some of these pods tossed in the fat of the fried bacon—bacon and mangetout Peas? *H. E. Durham.*

DEGENERATION OF POTATOS

THE reasons advanced by Mr. George M. Taylor for the degeneration of Potatos are fairly numerous, plausible, and in certain cases generally accepted by those who have studied the matter. Doubtless, many other causes at work remain to be discovered, so that much has yet to be accomplished by the pathologist. Exceptions, however, can be cited that run contrary to any thesis that one may advance to support an opinion. For instance, I know of a case where a gardener, and his father before him, grew Ashleaf Kidney on the same border consecutively for fifty-one years, and may still be doing so. The old Scotch Champion was in the height of its vigour in the seventies of last century, and is still grown. Deep eyed Potatos have not been driven out of commerce, for Great Scot, Sir Douglas Haig, and Southampton Wonder, the modern representatives of Champion, have deep eyes, and are certainly vigorous. On the contrary, Schoolmaster has not very deeply sunken eyes; though it has been in commerce since 1876, is immune to wart disease, and is still cultivated to a considerable extent. Starch is the last to be attacked by wart disease, and that evidently applies to some other fungi. During the past season I examined two varieties of Potatos that seemed to be attacked by leaf curl, though the haulm showed no signs of disease till attacked by late blight (Phytophthora). Under the microscope I could find no trace of mycelium in the blackened portions of the tubers, and concluded that the disease was bacteriosis (Bacillus solanacearum). The tissues were reduced to fragments, but the starch was abundant, pearly white, with the hilum and lamination of the grains still distinctly visible. It is my opinion also that vegetative methods of propagation need not be the cause of degeneration. Besides the cases I have mentioned, others could be cited of longevity under cultivation and in a wild state. Some plants have no other method of increase, and many of them have existed for centuries. The improvements effected by man amongst Potatos are not in all cases conducive to longevity, and high-grade, floury, white Wheat may be cited as another instance, where improvements have rendered such varieties unable to withstand severe winters and uncongenial soil and summers. Again, Potatos are often grown commercially on soils that are not the most suitable. Seed tubers of the varieties King Edward VII., Queen Mary, and Evergood realise 10s. more per ton, wholesale, when grown on the best Lincolnshire silt land, than the same varieties when grown in dark soils. *J. F.*

PEAS.

RICH soil, deep cultivation, and a liberal supply of manure are needed to grow good Peas. The plant needs plenty of moisture, and during dry periods should receive a liberal supply of clear, soft water at regular intervals. Weak liquid manure may also be given with advantage when the pods are swelling. A mulching of farm-yard manure will do much to retain the moisture in the soil, but this should be applied before the plants show the slightest signs of distress from drought, or very little advantage will be gained by it. As soon as the plants have been carefully staked, the ground between the rows should be lightly broken and the mulching applied, placing some of the material close to the stems.

The first sowing may be made in the open as early in January as the state of the soil permits, and varieties with a hardy constitution should be chosen for sowing. The situation should be sheltered from cold winds. Make the seed drills 4 inches deep and the same in width, running them from north to south in order that the plants may receive all the light possible. For the earliest sowing the seeds should be sown thickly, and covered with 2 inches of the finest soil from the drills. The remaining soil may be placed on the windward side as a shield from cold east winds.

In order to maintain an unbroken supply of pods from the beginning of June until the plants are destroyed by frost in the autumn, it is necessary to sow regularly as soon as the young plants from the previous sowing are through the surface. Certain varieties of Peas take much longer to mature their pods than others, and this fact should be considered at the time of sowing. For instance, Gradus, Discovery, and Alderman sown at the same time would form a very good succession, but these varieties should not be sown in the open before the end of March, or many of the seeds may perish. Round-seeded, hardy sorts only should be sown in the open for the first crop, and for this purpose The Pilot is the best variety.

If seeds are sown in pots or boxes under glass at the end of January and gradually prepared for planting at the end of March or early in April, an advantage of a few days may be gained, especially if the spring is unfavourable for plants in the open. For this purpose The Pilot may also be sown with Gradus, Early Giant, and Bountiful. If early dwarf kinds are preferred, Little Marvel, Langley Gem, and The Sherwood are good in every respect. Second early and main crop Peas should be sown thinly in an open position, the distance between the rows being regulated by the height of the varieties. As the season advances the seed drills may be taken out a little deeper than is usual for early crops, so that after the seeds are covered with 2 inches of soil there may still remain a sufficient space for earthing up the plants without forming a ridge, which is sometimes the means of casting rain-water away from the roots at a time when moisture is needed. Second early varieties may include Duke of Albany, Alderman, Discovery, Matchless Marrow, and Quite Content, which for large, well-filled pods has few equals.

Main-crop Peas should be sown thinly on rich, deeply cultivated soil in an open situation. If the soil is dry at the time of sowing, make the drills a day previous to sowing, and water it thoroughly, using soft water. The seeds should be sown the following morning. Main-crop Peas are frequently affected by mildew, but early mulching will do much to prevent this trouble. Main-crop varieties may include Royal Salute, 4 feet; Eureka, 3 feet; Perfection, 3½ feet; and selected Ne Plus Ultra, 6 feet. The last sowing should be made in June; at Windsor the last sowing is made as near the middle of that month as possible. It has been found that late varieties sown from the beginning to the middle of June give much better results than early sorts sown in sheltered borders in July. It is necessary for these late-sown Peas to be given strong sticks, as winds are often high and destructive in October. For this sowing, Gladstone, 4 feet; Rearguard, 4½ feet; Distinction, 4 feet, and Autocrat, 4 feet, will give pods throughout September and October, until the plants are cut down by frost. Peas are often attacked by birds during both spring and autumn, and to prevent this it is sometimes necessary to net the rows. *J. Dunn, Frogmore Gardens, Windsor.*

COMPETITION FOR ALLOTMENT HOLDERS.

THE Sulphate of Ammonia Association offers prizes to allotment holders in England and Wales for the largest amount of food produced on plots of a given area. In awarding the prizes the judges will consider economical methods of cultivation and the husbandlike manner in which the plot has been managed. The prizes will consist of War Loan Bonds of the value of £25, £20, £15, £10, and £5 respectively. Particulars of the competition may be obtained from the Northern offices of the Association, Gas Offices, Crowlands, Southport.

HOME CORRESPONDENCE.

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

CUPRESSUS FORMOSENSIS (see p. 19).—I think Mr. Vicary Gibbs is right in attributing his failure with this Cypress to soil rather than temperature. We have only one plant here, given me as a small seedling by Mr. Elwes. It was kept in a cold frame through the winter of 1915-16, planted out in spring when 12 inches high, came through the severe winter of 1916-17 uninjured without any protection, and this year it has taken no notice of 23° of frost, which we had on the night of January 7-8. I think this may be taken as proof that the species is thoroughly hardy on suitable soil. It is true that here we have a mild western climate; but Dawyck, where this Cypress has proved hardy, is in a very cold district, the winter there being far more severe than in Hertfordshire. *Herbert Maxwell, Monreith.*

LIME WASHING.—The need for lime washing is near at hand, so attention may be called to a practice advocated in some recent French books of adding one part of clay to two of lime (by volume) as a means of caising the lime to adhere. I give the suggestion for what it may be worth, as I have not yet tried it. *H. E. D.*

STORING APPLES (see pp. 8, 19).—I am sorry that your correspondent *Puzzled* is perplexed as to the advice given by Mr. Hudson and myself in the issue for January 12 on the storing of Apples. Mr. Hudson is a foremost authority on all matters appertaining to horticulture, and even in our two articles I think I can claim there is little or no divergence of opinion. Last autumn we harvested the largest crop of Apples ever obtained at Aldenham, and we carried out the method I recorded in my note to the full. Never have we had better fruit, and certainly never so few decayed in store. Though we have a large fruit-room, it was not nearly large enough to hold our crop of Apples, even when every possible inch of space was occupied. The space that would have been required if we had acted on the principle so often advocated of laying the fruits out singly would have been beyond us. What I particularly wished to emphasise was the fact that the majority of inexperienced growers err on the side of keeping store-houses much too warm and dry, and as an example to illustrate that this was not necessary, I mentioned the case of the fallen Apple, which, receiving protection from frost under fallen leaves, keeps so well, being doubtless assisted in this by the moisture from the damp earth. This was not, as *Puzzled* suggests, a proof of "the necessity of their being perfectly sound," or, as he may mean, the advisability of piling the fruit. At this season of the year the fruits are becoming considerably fewer, and the later varieties can be thinned out to occupy more room, but this does not alter my opinion that piling does no harm, and most likely assists the keeping of Apples. In confirmation of my previous remarks I shall be pleased to show *Puzzled*, or anyone else interested, the results of fruit stored in the way I recommended. *Edwin Beckett.*

Your correspondent, *Puzzled*, is troubled in mind at what he conceives to be a conflict of opinion between two gardening experts, Messrs. Hudson and Beckett. He need not be; Mr. Hudson, speaking generally of storing fruits, says that where possible they should not be allowed to touch one another, and very sound advice, too, having regard to the readiness with which damaged or diseased fruit will infect sound. Nevertheless, I cannot imagine a practical man proposing to apply this rule to a comparatively hard, cheap, abundantly produced fruit like Apples. If it had been so applied at Aldenham during the last two years, instead of a modest fruit room, one built on the scale of a colossal ballroom would have been requisite to hold the output of the orchard. I may remark that if there were such a conflict of testimony as *Puzzled* represents, which there is not, affirmative evidence is much stronger than negative. If one of two men, of equal character and capacity, were to warn me against doing a thing, and the other were to tell me that he had himself done it for years without disadvantage, I should not hesitate to make the experiment. I am at a loss to understand why *Puzzled* should quote some further excellent advice of Mr. Hudson's as to the careful handling of fruit and separate taking up of each. There is nothing in Mr. Beckett's writing in conflict with this, and none is likely to be found in that of any sensible man. *Vicary Gibbs.*

—— In reference to the controversy as to methods of storing Apples, my experience indicates that the fruit keeps best when not spread out thinly, as it is less likely to shrivel. Fortunately this is the case, as the space in a frost-proof fruit-room is much too precious to allow of laying out the Apples so that they do not touch each other, and such a method would be useless to a market grower who needs to store large quantities. My plan, which has proved quite satisfactory for years past, when the Apples for storing have been properly selected for soundness, is to place about 20 lbs. in a handled tray 2 feet by 1 foot, really a Potato sprouting box, and pile up full trays to the ceiling, one tray being empty and turned upside down at the bottom of each tier, to avoid too much dampness from the earthen floor, which has been found a cause of rotting when the bottom tray has been filled. The filled trays are placed in tiers, 14 in a tier. The Apples are two deep in a tray, and packed closely. The space available inside rafters in my fruit-room is 18 feet 9 inches by 14 feet 6 inches, with a height of 10 feet 4 inches. Allowing two passage ways along the length of the room and one across the top, 1,092 trays can be stored, containing 500 to 550 bushels according to the proportions of heavy and light varieties. As there is a space between the top layer of Apples and the handle in each tray big enough to get the arm in, the fruit can be inspected at any time by walking down a passage way. At the present time we are getting a little over a bushel of 10 lbs. of sound Bramleys out of two trays, and from a lot of 21 bushels recently sold, only twelve Apples had to be taken out as unsound. The quantity named came out of 41 trays. As a matter of fact, double the number of trays of Apples can be stored in the fruit room in the course of the season if the latest varieties are kept out of it until the end of November, while less late varieties are being marketed. Further evidence bearing upon the subject in dispute is afforded by the fact that even "drops," stored in great heaps wherever a place under cover could be found for the extraordinary quantity blown off the trees by gales, kept at least as well as "drops" in trays. It is doubtful whether any more rotted, and certainly there was much less shrivelling in the heaps. *Southern Growers.*

SOCIETIES.

ROYAL HORTICULTURAL.

JANUARY 15. The first meeting of the Royal Horticultural Society in the New Year took place on Tuesday last, in the Drill Hall, Buckingham Gate, Westminster. The exhibition was small, but there was a good attendance of visitors.

Of the few exhibits, Orchids formed the majority, there being, besides, only a group of Carnations, a stand of dried Beans of the Haricot type, and a few floral paintings.

Floral Committee.

Present: Messrs. H. B. May (in the chair), Geo. Paul, John Heal, W. J. Bean, J. Green, W. P. Thomson, J. W. Barr, C. E. Shea, W. Howe, C. Dixon, H. J. Jones, C. R. Fielder, E. F. Hazelton, G. Reuthe, S. Morris, R. C. Notcutt, James Hudson, J. Jennings, W. B. Cranfield, Chas. E. Pearson, E. H. Jenkins, and J. F. McLeod.

AWARD OF MERIT.

Carnation Dr. F. C. Ward.—A variety of the perpetual flowering type, with a moderate sized, well-formed bloom of rose-cerise colour. The stems are stiff and stout, whilst the calyx is perfect. Shown by F. C. Stoop, Esq., West Hall, Byfleet (gr. Mr. G. Carpenter).

GROUP.

The only collection staged was an exhibit of perpetual flowering Carnations by Messrs. Allwood Bros. Their new variety Marion Wilson was shown, and there were also excellent blooms of the cerise-coloured Destiny. (Silver Banksian Medal.)

Orchid Committee.

Present: Sir Jeremiah Colman, Bart. (in the chair), Messrs. Jas. O'Brien (hon. secretary), W. Bolton, A. Dye, Walter Cobb, J. E. Shill, J. Cypher, Frederick J. Hanbury, J. Charlesworth, A. McBean, C. H. Curtis, T. Armstrong, Fred. K. Sander, Pantia Ralli, R. G. Thwaites, J. Wilson Potter, and C. J. Lucas.

AWARD OF MERIT.

Laelio-Cattleya Ounius Bryndir variety (see fig. 13, p. 27) (*L. C. Ounius* × *C. Enid*), from Dr. Miguel Lacroze, Bryndir, Roehampton. A well-formed flower of exceptionally attractive colour. The sepals and petals are Apricot-yellow with a slight rose shade, and the lip vinous-crimson with gold lines from the base to the centre.

Cypripedium Matthewsianum Usk Priory variety (*Thalia Mrs. Francis Wellesley* × *Hera Euryades*), from R. Windsor Rickards, Esq., Usk Priory, Monmouthshire.—The flower, in its colouring and perfect form, is nearest to C. Thalia Mrs. Francis Wellesley. The dorsal sepal is white, with small emerald-green base and many lines of claret-purple spotting, changing to rose in the smaller spotting towards the margin. The petals and lip are tinged with brownish-purple, the margins being pale yellow.

PRELIMINARY COMMENDATION.

Odontoglossum Apollo (*Armstrongiæ* × *Queen Mary*), from Messrs. Armstrong and Brown, Orchidhurst, Tunbridge Wells.—One of the finest of a dozen new Odontoglossums flowering for the first time staged by this firm. The large flower had a blush-white ground heavily blotched and tinged with reddish purple.

Odontoglossum Peerless Orchidhurst variety (*Ossulstonii* × *crinitum*), from Messrs. Armstrong and Brown.—The flower is dark claret purple with white margins and tips to the segments. The second of the cross to receive commendation.

GROUPS.

The Duke of Marlborough, Blenheim, Woodstock (Orchid grower Mr. J. Smith), exhibited Cypripedium Curtingo (Curtisii × Flamingo), a very distinct hybrid with purple tinted, dorsal sepal, having a broad white margin; and C. Leucurtis (Leeanum × Curtisii), with an attractive flower.

R. Windsor Rickards, Esq., Usk Priory, Monmouthshire, showed Cypripedium Euryiades Mirium, a noble flower of fine shape; and C. Commodore (Memoria Jerninghamiæ × Alcibiades illustre).

Dr. Miguel Lacroze, Roehampton (Orchid grower Miss Robertson), staged a finely flowered specimen of Odontioda Madeline, Bryndir variety, the large flowers having a pale yellow ground densely blotched with Indian red.

Messrs. Armstrong and Brown, Orchidhurst, Tunbridge Wells, were awarded a Silver-gilt Flora Medal for a group of Odontiodas, Odontoglossums, and other Orchids.

Messrs. Charlesworth and Co., Haywards Heath, were awarded a Silver Flora Medal for a group rich in their handsome hybrid Orchids, chiefly Odontoglossums and Odontiodas.

Messrs. Jas. Cypher and Sons, Queen's Road Nurseries, Cheltenham, were awarded a Silver Banksian Medal for a group of Cypripediums with white Laelia anceps, white Calanthe Harrisii, and white Cypripediums.

Messrs. J. and A. McBean, Cooksbridge, were awarded a Silver Banksian Medal for a group in which their famous strain of Cymbidiums were a feature.

Messrs. Hassall and Co., Southgate, were awarded a Silver Banksian Medal for a group of Cymbidiums, the finest being C. Capella magnificum (Wiganianum × Parwelsii).

Messrs. Sanders, St. Albans, showed Cymbidium Albatross (Gottianum × grandiflorum), with cream white flowers lined and dotted with reddish rose.

Messrs. Flory and Black, Slough, showed Odontoglossum La Seine, a showy hybrid of un-

recorded parentage, with light claret red flowers with a narrow blush-white margin.

WALTER COBB, Esq., Normanhurst, Rusper, showed a well-flowered plant of Miltonia Phalaenopsis Cobb's variety.

Fruit and Vegetable Committee.

Present: Messrs. W. Poupart (in the chair), H. S. Rivers, A. W. Metcalfe, W. Bates, Ed. Beckett, O. Thomas, Ed. Harriss, A. Bullock, P. D. Tucker, F. Perkins, W. H. Divers, A. R. Allan, E. A. Bunyard, and F. Jordan.

AWARD OF MERIT.

Apple St. Cecilia. A medium-sized fruit, of strikingly handsome appearance, said to have been raised from Cox's Orange Pippin crossed with an unknown variety. The seedling showed evidence of Cox's Orange Pippin in its general appearance, with rather more colour, and more conical shape. The flesh is solid, juicy, and of excellent flavour; the stalk is rather deeply set, and somewhat slender. The eye is shallow. The variety is one of the best new dessert Apples of recent times. Shown by Messrs. JOHN BASHAM AND SONS, Bassaleg, Newport, Mon.

DRIED BEANS FROM WISLEY.

An exhibit of much interest was shown from the Society's gardens at Wisley, a collection of dried Beans of the Haricot type. The cropping qualities of the several varieties were demonstrated, the amount of produce obtained in each case from one ounce of seed being indicated. The best cropper was the Dutch Brown, which gave 2 lb. 15 oz. from one ounce of seed sown. This was followed by Long White Canterbury, with 2 lb. 11 oz.; Long-podded White, 2 lb. 9 oz.; Glory Butter (of a pale liver-colour), 2 lb. 6 oz.; Ecclesiastic (a buff-coloured variety), 2 lb. 5 oz.; Jaune Cent-pour-un (pale brown), 2 lb. 5 oz.; Gris Maraicher (mottled), 2 lb. 4 oz.; Cent-pour-un (same colour as Dutch Brown, but smaller), 2 lbs.; Comtesse de Chambord (pearly white), 1 lb. 15 oz.; Perfection (black and white, 1 lb. 11 oz. The samples were exceedingly good, and the exhibit amply demonstrated the possibility of growing and drying Haricot Beans in this country.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

JANUARY 5. *Committee present:* The Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, J. Cypher, J. Howes, A. J. Keeling, D. McLeod, J. McNab, W. Shackleton, H. Thorp, and H. Arthur (secretary).

AWARDS.

FIRST-CLASS CERTIFICATES.

Cypripedium Persius, a well-shaped flower, the round, dorsal sepal being 3 inches across, with a white ground, heavily spotted crimson; the broad petals are mahogany red; and *C. Persius* var. *Beta*, the dorsal sepal is almost solid crimson, with white margin; lip and petals honey-yellow veined crimson, both from W. B. LEE, Esq.

C. Christopher var. *Grand Duke Nicholas* (*Miss Canon* × *Lucasiana Canona*), a large flower of perfect shape, the dorsal sepal measuring 4 inches across, porcelain-white, with a green base and numerous white spots, the lip and petals are greenish-brown; from S. GRATRIX, Esq.

AWARDS OF MERIT.

Cypripedium Pyramus (*Leeanum* var. and *C. Sir H. Burdinson* (*Actaeus* × *longipetalum*), both from S. GRATRIX, Esq.

C. Gloria (*Actaeus* × *longipetalum* × *Golden Glory*) and *C. Golden Dawn* (*Golden Gem* × *Sun Tedrum*), from T. WORSLEY, Esq.

Odontoglossum crossum Perfection (*crispum Perfection* × *andersonianum*), from Dr. CRAVEN MOORE.

GROUPS.

The following medals were awarded to collections:

Large Silver Medal to W. B. LEE, Esq. (Rex Wood (gr. Mr. Branch). *Silver Medal* to Messrs. CYPHER AND SONS, Cheltenham.

SOUTHAMPTON ROYAL HORTICULTURAL.

JANUARY 9.—The annual general meeting of the above society was held on the 9th inst., at the Municipal Offices. The Mayor, Mr. Councillor A. W. Pearce, J.P., presided.

The Chairman of the Council, Professor Lyttel, M.A., submitted the 55th annual report, which stated that nearly 3,000 visitors attended the summer show. A floral bazaar held on the occasion for the benefit of the Red Cross and Order of St. John realised a net profit of £50.

The total receipts for the year amounted to £516 5s. 3d., and the expenses to £392 19s. 11d., leaving a profit of £123 5s. 4d. on the year's working, whilst the total assets are over £153.

It had been decided to hold a Rose Show at South Stoneham House on June 26, a fruit, vegetable, and Carnation Show on the Pier on July 23 and 24, and an Autumn Show, mainly to encourage local food production, on October 15 and 16.

CROPS AND STOCK ON THE HOME FARM.

OATS.

(Concluded from p. 20.)

WHERE the soil is dry and cloddy more harrowing and rolling will be required; light soils cannot well have too much work behind the sowing, as the repeated treading of the soil with the horses makes a firm and an advantageous seed bed. In stiff, wet soils less work is wise, as such soil should not be kneaded too much. For Oats I prefer to see a smooth rather than a cloddy surface. In the latter the seed germinates irregularly, and when rolled later many of the plants are buried by the clods and never come through again.

Where rooks are troublesome it is a good plan to dress the seed with some preventive such as Corvusine. Some find a difficulty in preparing the seed with this mixture, finding it rather "sticky" to handle. If a tin of Corvusine is stood in hot water for twenty minutes it will be found that when warm no difficulty will be experienced in mixing it with the seed, and the latter can then be sown easily and at once.

In newly-ploughed grassland much harrowing is necessary behind the sower to obtain sufficient tilth to bury the seed properly and provide a firm base for the roots as well as to hamper the progress of wireworms as much as possible. To aid this a heavy roller should be drawn over the plot several times alternately with harrows.

The quantity of seed required per acre varies considerably in different localities and circumstances. Where seed is sown from home-grown stocks it is wise to reject the small seeds by screening, as these tiny Oats, so common in some samples, cannot produce such vigorous plants as full-sized Corn. Seedsmen prepare their seed so well by screening that small seeds are never seen in their samples; they evidently prefer the more even-sized grain. In the general seeding of Oats of the Tartarian variety I sow four bushels per acre, sometimes five where birds are likely to be troublesome in outlying fields and where the land is, perhaps, in moderate condition only. Oats do not require so much space as Wheat; the tillering properties are not so pronounced as in Wheat, therefore the plant requires less room.

In extra rich soil, say, behind sheep with cake-fed roots, leaving a good dressing early in the season, three bushels of seed would suffice. Some of the stronger growing varieties require a greater distance, and three bushels would suffice. Some persons sow only 2½ bushels. I am a firm believer in plenty of seed as a safeguard against the many pests farmers have to contend with. As to variety, much depends upon requirements and local fashion. In some counties White Oats only are grown; in others Black. Black Tartar (Avena orientalis), which was introduced into Britain at the end of the eighteenth century, is the oldest of present-day popular varieties, and in some counties the principal Black Oat grown. In favourable seasons it yields as many as twenty sacks per acre, often weighing 42 lbs. per bushel. The ear, or panicle, grows one-sided. The straw is the most valuable of all Oats as food for cattle or for cutting into chaff for horses.

Messrs. Garton, of Warrington, have been most assiduous in raising new varieties of Oats during the past twenty-five years, including that popular White Oat Abundance, one of the best of White Oats grown. It is the result of a cross between White Angust and White Swedish. Other White varieties possessing much merit are Leader and Hero. From the same firm came Storm King, Yielder, Bountiful, and The Goldfinder, all desirable black varieties. For late sowing White Waterloo is excellent.

Hallett's and Bennett's strains of Black Tartar are no doubt very desirable where the Black Tartarian Oat is required. The Thousand Dollar Oat was introduced from America and re-selected by Professor Middleton, of Cambridge University. *E. Molyneux.*

Obituary.

JOHN LEEMANN.—Following closely on the death of Mr. Elijah Ashworth and Mr. Oswald O. Wrigley, both well known names in the Orchid world, we have to record the death of Mr. John Leemann, of West Bank House, Heaton Mersey, Manchester, which took place at his residence on the 14th inst., in his 75th year. The West Bank House collection of Orchids was one of the oldest and best in the Midlands, and has been frequently referred to in our columns. Mr. Leemann had a special liking for fine Odontoglossums and rare varieties of Cattleyas, a full collection of white forms of which was included in his collection. He was a Fellow of the Royal Horticultural Society, and frequently exhibited plants before the Orchid Committee, securing awards for some of them. Of late years he has been more closely in touch with the Manchester and North of England Orchid Society.

ANSWERS TO CORRESPONDENTS.

ANNUALS FOR CUT BLOOMS: *L. H.* Sown in autumn for spring, and again in spring for summer and autumn flowering, Antirrhinum, Nelrose, Clarkia, Firefly, and Stock-flowered Larkspur in variety. In spring, for flowering the same season, sow Aster, Comet and single, Chrysanthemum Morning Star, Eschscholzia in variety, Godetia Schamnini fl. pl., Nasturtiums The Pearl and Aurora, Shirley Poppies (several times), Sweet Scabious, Sweet Sultan, and in autumn, for spring flowering, Schizanthus wisetonensis, Mignonette and Sweet Peas should also be included in the list of kinds grown.

NAMES OF FRUITS: *H. E.* Apple Round Winter Nonesuch. *G. A. W.* Bruised and very poor fruits; cannot be identified. *R. W. R.* Round Pear Broom Park; large Pear decayed. (Thanks for 2s. for R.G.O.F.—Eds.) *F. C.* 1, Newtown Pippin; 2, Court Pendu Plat; 3, Allington Pippin; 4, Small's Admirable; 5, Margil; 6, Hanwell Soaring.—*W. B.* Apple not recognised; most likely a local variety.

PEAS UNDER GLASS. *E. L.* As the bed is 4 feet wide, you will be able to grow two rows of Peas in each bed, allowing a space of 2½ feet between the rows. If the bed is 4 feet from the roof-glass, varieties that grow 2½ feet high such as Early Giant and Daisy would be the most suitable. If the space is 5 feet, Gradus and Duke of Albany would be suitable. Dwarf varieties such as Harbinger and Little Marvel would give good returns, but these should be grown within 3 feet or 4 feet of the roof-glass. Do not sow the seeds thickly. Use rich soil mixed with a little decayed manure, and make it moderately firm. When water is necessary, give sufficient to moisten the bed thoroughly. Very little fire-heat is required; a temperature of 45° at night will be warm enough in cold weather. Air should be admitted freely in mild weather, but cold draughts are harmful, favouring the spread of mildew.

Communications Received.—Puzzle (kindly send name and address as promised).—A. C.—H. J. M.—A. G.—E. W. R.—J. W.—Constant Reader.—R. W. R.—Japonica.—J. W. J.—H. C. H. B.—A. P. W.—J. T. M.—J. D.—J. W. G.—E. W. C.—Sutton.—E. W. M.—Grasmere.—T. W. B.—Aldenham.—W. E. B.—H. B. D.

THE
Gardeners' Chronicle
No. 1623.—SATURDAY, JANUARY 26, 1918.

CONTENTS.

ILLUSTRATIONS.

PLANT COLLECTING IN CHINA.

SHIEMALATSA, TSEDIRONG, UPPER MEKONG, VIA WEI HSI, N.W. YUNNAN

SINCE our arrival at Shiemalatsa the weather has continued very dry and warm. There is every sign of a third year's drought—a serious affair for the inhabitants of the valley, but there is a plentiful supply of moisture on the ranges from daily rain and the melting of the snows, so the Alpine flora will not suffer, though, as a result, the seed harvest may be earlier. Daily the lower valley is like a furnace; scarcely a breath of wind, a sky so intensely blue as to make one blink, and a sun, for brazenness excelling anything I have ever experienced. The climate resembles that of Mandalay; yet, on the ranges, above 9,000 feet or so, the air is cool and bracing, with lots of snow about, and, as I say, an abundance of moisture. Of course, it is all caused by the range acting as a rain screen. It is a trying country to work in, the changes of temperature are so great and the slopes of the mountains so steep and broken. I shall be very pleased when the season ends and I can get off south.

As I mentioned in my last letter, the Tibetan province of Sarong is only a day's journey to the north. There the most prominent features of the Salwin Mekong divide are the two sacred mountains Doker-la and Ka-gwr-pu, to which numberless Tibetans make yearly pilgrimages. The latter is pronounced "Karki'bu," though I spell it as given on the maps by Davies and Ryder. Two parties of my men have been up there recently, but judging by the results, and the information they give me, it does not appear to be a very productive area.

They tell me both mountains are very rugged—they certainly appear so from a distance—broken cliffs and jagged peaks and spurs, huge areas of dwarf cam and rock taking the place of the rich alpine meadows we have at this latitude. The country is taboo to me, this season at least, as I am bound by a promise to the Consul and the Chinese officials not to enter actual Tibetan territory. I regret this very much, as I should have liked to secure photographs of the region and the people. The herbaceous material my men brought back was not particularly interesting, it included a new Meconopsis, after the M. bella type, a number of Senecios, Cremanthodiums, Gentians, Saussureas, and a cushion Primula akin to P. dryadifolia. Of lower level shrubs there were only a very few, the most striking and worthy of mention being a new Lonicera, allied to L. xerocalyx, with yellow flowers and pale orange fruits. Of Rhododendrons they secured fourteen species new to me, but, unfortunately, the majority were in fruit, and of two only foliage was collected. One of the latter is a shrub of 9-12 feet, with bright green, bullate leaves, as seen in R. bullatum Fr., and a heavy grey-white tomentum. The young wood is also heavily tomentose, and from the description given it must be a very handsome shrub. I mean to make every effort to find a plant in flower or fruit, and have ordered my men to make a most exhaustive search. The other parties who were over on the Bei-ma-Shan were more successful, and made a fine haul of herbaceous material: Aconitum, Delphinium, Trollius, Aster, Senecio, Cremanthodium, Saxifraga, Gentian, Meconopsis, Anemone, Primula, Androsace, Potentilla, Corydalis, Draba, and several other good crucifers. One of the best finds they had was a Boraginaceous plant, which I cannot place. It is a lovely thing, and I have every chance of getting seed of it. A cushion plant of 6-12 inches diameter, or even more, its habitat is on cliffs and boulders and stony screes at 14-15,000 feet. The foliage is small, imbricated on the stems, coated and fringed with silvery, glistening hairs; the flowers are stemless, solitary, and embedded in the foliage at the end of each stem, brilliant blue, and about the size of those of Cynoglossum amabile. The flowers are freely produced, and it is the finest thing of its kind I have seen for some time.

One of the Meconopsis collected was that which I have in fruit only under No. 13,169 of the 1914 collection. In habit it much resembles a dwarfish M. integrifolia, but the whole plant, and especially the capsule, is smothered in golden, shining, rather bristly hairs, never seen in the type. In determining the Meconopsis of 1914, Sir D. Prain put down No. 13,169 as M. integrifolia. I have little knowledge of the genus excepting from a collector's standpoint, and there I for cannot dispute his decision, but it must be a very distinct variety, for the flowers are white and smaller than those of the type integrifolia. However, I hope to secure seed, and if you are successful in flowering the plants the point will easily be settled. (The Bei-ma-Shan is a portion of the Mekong-Yangtze divide.)

Another party of men went far south on this divide, principally to find the original type of Meconopsis speciosa as seen by me in August, 1905. They were successful, and I shall, if all goes well, collect abundance of seed. I have no knowledge of the Himalayan Meconopsis, but Meconopsis speciosa is the only species in Yunnan which is scented. It is deliciously fragrant, the fragrance resembling that of our own Dutch Hyacinths.

Altogether since we came here we have been most successful, and if I bag seeds of all the finer things I have found I shall be most pleased. The Herbarium numbers fully 1,000 species from Tengyueh, to date that is, and that takes some getting when the total is over 14,000 species. I have excellent reports of my Tengyueh and Talifu men, discounting those at Lichiang, and their spoil should add another 500 species. In going over my field book I find Rhododendron comprises some 15 per cent. of the total, and over a certain altitude in N.W. Yunnan Rhododendrons dominate in the flora.

They are so numerous, species and varieties, that I now find myself in a perfect tangle over them, and have given up even attempting to group them in the field. Most of the species of which only incomplete material was collected in recent years I have secured, as well as those of Soulie and Monbeig's collections, and I find groups of species, or one may call them varieties for the time being, formed round such as R. saluenense, R. Forrestii, R. Roxeianum, R. floccigerum, and R. sanguineum. I have at least five or six fine forms akin to R. saluenense, and the same of R. sanguineum. If what I have found are only varieties, then these two species sport as much as the variable R. dichroanthum of the Tali Range, or even more so in the case of the latter. Of the first there is apparently a different form on every range and divide. Of course, it is impossible for me to deal with these differences here; they will have to be worked out very carefully. Any information I might now give would possibly add to the confusion later. The original type of R. Forrestii, that with the black-crimson flowers, and red under surface to the foliage, I have not, so far, rediscovered. All the plants I have seen, though having the habit of the type, have blooms of a brilliant crimson or cherry scarlet, and much larger leaves. However, I have found another distinct species with the same creeping habit, with lanceolate foliage, 1½ inch by ¾ inch, and pendulous flowers 2-3 in a cluster, of a soft, dull rose throughout; a very fine and most interesting shrub, but apparently very rare. R. sanguineum and its affinities have formed a magnificent group, all the members of which have splendid flowers and bear most freely. The type, which I introduced in 1914 has blooms of the richest scarlet, fleshy, and enamelled on the exterior, of large size and abundantly produced. It is a shrub of 1-3½ feet, the tomentum on the under surface of the leaves, short, adpressed, and silvery-white. Another, a form with identical foliage, has flowers black-crimson—the colour of dried bullock's blood. Yet another form or species in the same class has rose blooms lined with white down the centre of each segment of the corolla, with the base white, reminding one of the striped pink and white Camellias. Of this the tomentum is much heavier and of a light biscuit shade.

Another form has blooms of the same size and consistency as the type, but of a most delightful shade of lemon-yellow, without variation, the tomentum on the under surface of the leaves very heavy and soot-coloured. Another plant has pure white blooms, with a buff-coloured tomentum on the leaves. R. Roxeianum a new sp., collected in fruit in 1914, has blooms pure white, spotted vivid crimson. In occasional specimens the margins of the corollas are flushed rose. There are many forms in the foliage of this species, but no variation in the flowers. It does not run into R. protoroides, a new sp., also collected in 1914 in fruit only, flowers dried, of that I am now convinced. This last-named R. protoroides also varies very considerably in colour. The type, as seen in scanty specimens in 1914, is pale canary-yellow, beautifully marbled deep crimson. I have specimens bearing yellow, white, white flushed rose, and pure rose flowers. R. campylogynum is as variable as any, with flowers from almost light pink to the deepest plum purple, the type shade of the Tali plant. There is also great variation in size of foliage. I have specimens with leaves as large as those of R. hypolepidotum—number of flowers and stature of plant which is anything from 2 inches to 2 feet. I could write columns on what I have in hand, and what I have seen points to the fact that we are approaching very close to the optimum of the genus, which I reckon is not very far from here, probably some short distance N. and N. of the mountains of Sarong.

NEW PRIMULAS.

What I write of Rhododendrons applies also to the genus Primula. I find groups of new forms, or sub species, collected round the types. I have found what I take to be a new species of the section Omphalogramma, and I expect many others will be discovered yet. There must be connecting links between P. Elwesiana of the Himalayas and those we know here. All the rock and bog species of the high alps, such as P. dryadifolia, P. bella, and P. amethystina, are, I find, the nuclei of groups of species or varieties, a point to be settled later. I have five plants all distinctly related to Primula dryadifolia, and yet

quite apparently distinct from the type. The same applies to the known members of the Nivalis section; quite a group has formed round the beautiful P. calliantha. Of them, one lovely plant was brought in recently, which, with the foliage of the calliantha, has much longer and more slender scapes, each bearing 2-5 blooms of the most enchanting shade of lake-carmine, with the eye dull grey, each bloom 1½-1¾ inches or even more in diameter, and deliciously fragrant. A glorious plant! Another, equally fine, of the calliantha group, has lovely rose-pink flowers.

I have so much to attend to at the base that I do not get out much. Last week I was out for three days on a portion of the Range totally new to me. The first day we had a most exhausting climb of 6,7,000 feet, a steady grind from 6.30 a.m. till four in the afternoon. The first part of the climb was through a thicket of rhododendron, mostly R. lepidotum, with a few R. anthopogon, R. setosum, and R. Wardii, and a few Primulas, P. Wollastonii, P. Forrestii, P. Bellidifolia, and P. Wardii. Then we came to the snow-line, and from there on to the top of the pass, 15,500 feet, we had a steep climb over snow and rock. The view from the top was magnificent, but I was too tired to enjoy it much. The descent was by a steep snow-slope, and then over a long moraine, and then down a steep grass-slope to the camp, which was pitched at 13,000 feet. The second day we had a long march down the valley, and then up a steep spur to a pass at 14,000 feet, and down the other side to a camp at 12,000 feet. The third day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The fourth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The fifth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The sixth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The seventh day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. 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The eighty-third day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The eighty-fourth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The eighty-fifth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The eighty-sixth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The eighty-seventh day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The eighty-eighth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The eighty-ninth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The ninetieth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The ninety-first day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The ninety-second day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The ninety-third day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The ninety-fourth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The ninety-fifth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The ninety-sixth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The ninety-seventh day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The ninety-eighth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The ninety-ninth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundredth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and first day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and second day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and third day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and fourth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and fifth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and sixth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and seventh day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and eighth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and ninth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and tenth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and eleventh day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and twelfth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and thirteenth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and fourteenth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and fifteenth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and sixteenth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and seventeenth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and eighteenth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and nineteenth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and twentieth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and twenty-first day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and twenty-second day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and twenty-third day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and twenty-fourth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and twenty-fifth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and twenty-sixth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and twenty-seventh day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and twenty-eighth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and twenty-ninth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and thirtieth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and thirty-first day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and thirty-second day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and thirty-third day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and thirty-fourth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and thirty-fifth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and thirty-sixth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and thirty-seventh day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and thirty-eighth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and thirty-ninth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and fortieth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and forty-first day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and forty-second day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and forty-third day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and forty-fourth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and forty-fifth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and forty-sixth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and forty-seventh day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and forty-eighth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and forty-ninth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and fiftieth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and fifty-first day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and fifty-second day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and fifty-third day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and fifty-fourth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. 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The one hundred and fifty-ninth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and sixtieth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and sixty-first day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and sixty-second day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and sixty-third day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and sixty-fourth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and sixty-fifth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and sixty-sixth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. 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The one hundred and seventy-first day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and seventy-second day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and seventy-third day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and seventy-fourth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. 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The one hundred and seventy-ninth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and eightieth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and eighty-first day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The one hundred and eighty-second day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. 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The one hundred and ninety-ninth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The two hundredth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The two hundred and first day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The two hundred and second day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The two hundred and third day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The two hundred and fourth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The two hundred and fifth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The two hundred and sixth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The two hundred and seventh day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The two hundred and eighth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The two hundred and ninth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up a steep spur to a pass at 13,000 feet, and down the other side to a camp at 12,000 feet. The two hundred and tenth day we had a short march down the valley to a camp at 11,000 feet, and then a climb up

silvery shining surface, regularly spotted deep crimson. That is the type as seen on the Tali Range also, but there is another kindred plant here—both were collected on the Chungtien plateau in 1914, and introduced by me then, and may be seen at Edinburgh, where they flowered last season—not so tall, nor so floriferous, with coarser foliage and smaller blooms, not fringed, and suffused a dull purple-rose, with many minute crimson spots at the base. It is, I now consider, quite distinct from N. pardanthina. A rarer plant than any, with its Heath like blooms and foliage, is Diplachne multiflora Hook., of which several groups were seen on the barer rock surfaces. Owing to the nature of the weather I did not then have an opportunity to explore the full extent of the valley or beyond it. Therefore I write only of the spot where we camped. It rained steadily in sheets all that night, all the next day, and following night, and when we set out on our return journey it was raining *as* steadily, with clouds of driving mist half obscuring everything. I went principally to secure photographs of some of the best plants, and after sleeping and sitting drenched and miserable under a shelter of Pine branches for two nights and the greater portion of two days, was forced to take them under the existing conditions. They have been developed: some are fair, but most are very weak, especially groups and scenes. When I left Lichiang some of my men came here by a different route, via the Yangtze valley, Wei Hai, and the Li ti ping, to secure flowering specimens of species collected only in fruit in 1914. They also ascended a portion of the Kari Pass, east of Yeh chik in this valley, and were most successful, bagging many good things, besides most of those they were instructed to secure. Of their lot the finest is Rhododendron glischrum, a shrub which, when it flowers at home, will cause a sensation. Mr Williams has a stock of it from the 1914 seed I gathered. It is a magnificently foliaged tree species, with big trusses of large, campanulate blooms, of a most wonderful shade of plum rose, with crimson markings, and a deep crimson blotch at the base. Even the dried specimens are a delight. *George Forrest.*

GROWTH OF SNOWDROPS.

THE illustrations in fig. 14 show the same Snowdrop clump photographed annually on the first day of the year in a Norwich garden, to indicate the relative severity of the winters. The exceptional hardness of the present winter compared with those of recent years is shown by this year's record, in which the shoots are but just appearing above the ground. How greatly the seasons vary is indicated by the record of 1913, the photograph for that year showing the plants already almost in flower.

APPLE WILLIAM CRUMP.

I HAVE long looked for an Apple possessing merit that could worthily be classed as a successor to Cox's Orange Pippin. No Apple approaches Cox's Orange Pippin in quality during the months of December and January. By some it is considered a November Apple; it is not so, as by that time the fruit does not possess that fulness of flavour and quantity of juice it subsequently develops. By the end of January, however, these qualities are failing, except under exceptional circumstances of preservation, although it is possible to preserve the fruit until the middle of April.

The variety known as William Crump (see fig. 15) was raised by Mr. Crump, of Madresfield Court Gardens, from Cox's Orange Pippin (fig. 16) and Worcester Pearmain (fig. 17). It possesses the flavour of both parents, and the yellow-coloured flesh of Cox's Orange Pippin especially. In size the fruit is larger than Cox's Orange Pippin; it has splendid flavour, is especially firm in the flesh, and full of juice, combining sufficient sweetness and a crispness that finds much favour.

The colour is intensely brilliant crimson, not only on the sunny side, but all over. The growth is more vigorous than I at one time thought it to be. Some growers—nurserymen in particular—find the tree shy in fruiting, but an open exposure and thin training do much to increase fruitfulness.

In many respects this Apple reminds me of that handsome Californian variety, Winesap, which is quite one of the best of foreign Apples. *E. Molyneux, Swanmore Park Farm, Bishop's Waltham.*

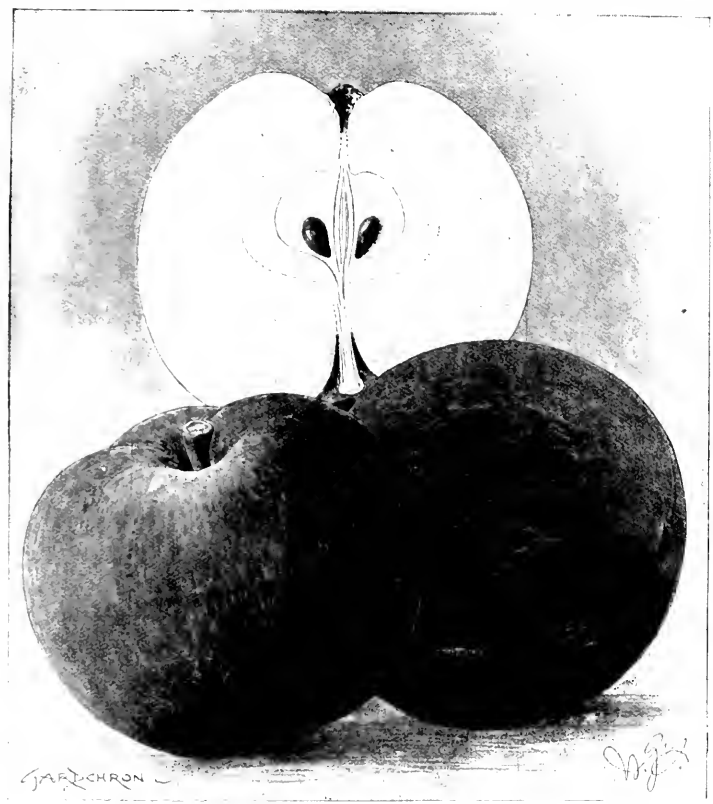

FIG. 15. DESSERT APPLE WILLIAM CRUMP.

ORCHID NOTES AND GLEANINGS.

NEW HYBRIDS.

LAELIA CRAWSHAYANA.—A very interesting cross between Laelia anceps and L. autumnalis, in which the latter is the seed-bearer, is sent by Mr. F. C. Puddle, Scampston Hall Gardens, Rillington. The flower bears a strong resemblance to L. Finckeniana, supposed to be a natural hybrid between L. anceps and L. albida, illustrated in the *Gardeners' Chronicle*, December 30, 1893, p. 804. The flower is interesting as disproving the suggestion of Reichenbach in *Gard. Chron.*, January 14, 1888, p. 41, that L. Gouldiana might be a natural hybrid of L. anceps and L. autumnalis.

It appears to be identical with Laelia Crawshayana Rchb. f. (*Gard. Chron.*, XIX., 1883, p. 142), the author holding that it was a natural hybrid between L. anceps and L. autumnalis, a contention which the present home-raised form seems to prove. L. Finckeniana may prove to be of the same parentage.

The flower sent is nearest to L. anceps in form and size, though intermediate in features. The sepals and petals are silver-white with a rose flush on the outer parts. The lip is white at the base, with fine purple lines on the side lobes, and the narrowly triangular front rose-colour.

COLOUR VARIATION.

MR. F. C. PUDDLE writes: "I wonder if we shall ever get to the bottom of the law of colour combination in hybrids? I am just flowering some home-raised batches of Cattleya Freya (Dowiana aurea × Mantinii) and C. Sylvia (Dowiana aurea × Fabia), and in each batch I have had flowers with yellow, white, and mauve sepals and petals. I have now the first flower open of a batch of Laelio-Cattleya Ingramii (C. Dowiana aurea × L. Dayana) × Cattleya Fabia (C. Dowiana aurea × C. labiata), and this has white sepals and petals. All these have Cattleya Dowiana aurea twice in their parentage.

Flowers sent to illustrate these remarks all have white sepals and petals with labellums showing rose and purple in varying degree, but tending to show that the colour of the petals of the parents had been eliminated, while the dark tints in their labellums had been changed to a much lighter shade. Colour in some crosses is known to vanish when crossed one way and to intensify in the reverse cross. It will be necessary in scientific records for future use that the male and female parent be indicated, so that reverse crosses may be made. In the

earlier years of Orchid hybridisation the seed bearer and pollen parent were recorded by the usual signs, but the information was in many cases unreliable, and the practice was therefore discontinued.

Mr. F. C. Puddle also sends a flower of Brasso-Laelia Moonbeam (B.-L. Jessopii × L. Dayana), pure white with a pale yellow disc to the lip, the Brassavola Digbyana in B.-L. Jessopii totally vanishing, the rose and claret-purple of the lip of L. Dayana, the yellow of L. xanthina, which was strong in B.-L. Jessopii, also disappearing, probably to return in the next crossing if a suitable combination is arranged.

LETTERS FROM SOLDIER-GARDENERS.

WHAT GARDENERS MAY LEARN FROM THE ARMY.

II.

INCINERATORS OR REFUSE DESTRUCTORS.

My last remarks under this heading evoked some comment and criticism. This is all for the good, for I am not writing dogmas, but suggestions. Now, there is nothing new about an incinerator. The novelty is in the word rather than the idea. It is probable that before the war the word never occurred in the plebeian vocabulary. Now, however, it has come to stay. It is an essential institution on sanitary grounds where a number of men are billeted, and I doubt not that many a soldier who takes to gardening will construct an incinerator for the burning of his garden rubbish, much in the same way as we have been accustomed to do it with the time-honoured smother fire. There are various types, according to the material at hand for construction. I will describe a few of the more common. An uncommonly good type is a square brick structure, roughly about 4 feet square and 4 to 5 feet high, provided with an opening at the bottom for draught and for withdrawing ashes; another higher up, which can be covered in with sheet iron, for piling in the refuse; a movable cover of sheet iron to keep down the flame; bars of iron to keep the fire above the ground; and a pipe or stack to take off the smoke. This could be cheaply constructed by anyone, and would prove an efficient method of disposing of rubbish, burning soil, and providing valuable ashes for the garden. Owners of a greenhouse would be quick to realise that the top would form a good place for warming, drying, and sterilising potting soil and for drying pots and boxes. In fact, my imagination runs so high that I am not so sure that, provided there were a sufficient amount of rubbish or earth to be burnt, we could not form a hot-bed over the top.

Another type which is often seen has simply a layer of bars about a foot from the ground and a square enclosure of sheet iron. This has no top, but one could easily be devised, as well as a chimney. Yet another type is a square or circular stack of open-work brick, by which I mean bricks built with open spaces between them. Usually, but not always, bars are provided. The bars are, of course, any iron that happens to be available, such as the uprights used for barbed wire, or iron window bars. This type is not covered in. A very crude kind of incinerator is sometimes seen which practically represents a wire-netting basket. Iron stakes are driven or secured into the ground; a bottom is made of strong wire netting a foot or so above the ground, and the sides also are enclosed with wire netting, so that we have what might be called a glorified brazier. Undoubtedly the best form for garden purposes is one that is solidly enclosed except for providing an inlet for draught and an outlet for smoke. It would prove a much neater contrivance than the old smother fire, and would equal, if not exceed, it in efficiency. *William F. Rowles. B.E.F.*

The Week's Work.

THE KITCHEN GARDEN.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

BROAD BEANS.—To obtain early pods of Broad Beans the seed should be sown at the first opportunity, as recommended last week under "General Remarks." The earliest sowings are most appreciated, as Broad Beans are not in much request when Peas and Runner Beans are plentiful. The varieties Beck's Dwarf Green Gem, Early Longpod, and Broad Windsor for the second crop, are suitable sorts to grow.

EARLY RADISHES.—Radishes may be grown amongst other early crops, or, better still, in separate frames, if any are available. The seed germinates rapidly, and should be sown thinly, or the plants will fail to "bulb" quickly. Let the plants receive as much sunlight as possible; the frames will not need much ventilation but all the light possible. For Radishes a frame may be prepared similarly to that intended for Carrots, sowing the seed broadcast, and covering it with a little fine soil. There are numerous good early varieties; a mixture of oval, turnip-shaped, and long-rooted varieties forms the daintiest dish.

FIG. 16.—APPLE COX'S ORANGE PIPPIN. (See p. 33.)

MUSHROOMS.—Too much artificial warmth, and especially during very cold, frosty weather, is a frequent cause of failure with Mushrooms in houses, and quickly exhausts the beds. A little extra fire-heat may be necessary if the weather continues wintry, but 50° should not be exceeded; in very severe weather a fall of 5° in the temperature will do no harm. Be careful not to use an excess of moisture; a gentle syringing with tepid water is generally all that is needed at this season, and when no fire-heat is used syringing will not be necessary.

LEEKS.—These vegetables usually keep sound very late in the season, and the crop should be reserved, as much as possible, as there will be a demand for them when the Onions have all been used. Leeks may be lifted and bedded in soil, but there is no necessity for doing this unless the ground is required for other purposes. If extra fine Leeks are needed for exhibition purposes, a pinch of seed should be sown at this date. Lyon is a popular variety for exhibition.

JERUSALEM ARTICHOKE.—The Jerusalem Artichoke often succeeds where other vegetables would fail, and the tubers provide an agreeable variety at a time when only a few kinds of vegetables are available. Although the crop succeeds with very little trouble, this should be no excuse for growing the plants on the same ground year after year; ground Artichokes pay for good culture and a change of soil. The plant is hardy, and should the weather and ground be favourable, planting may be done now. The crop succeeds best in deeply-dug but not excessively rich ground. The tubers should be planted about 10 inches apart, and the soil moulded over them; beyond an occasional cleaning of the ground, nothing further will be required.

FRUITS UNDER GLASS.

By W. J. GUISE, Gardener to Mrs. DEMPSTER, Keele Hall, Newcastle, Staffordshire.

CHERRIES IN POTS.—The forcing of Cherry trees in pots must not be hastened unduly by an excessive amount of fire-heat. A night temperature of 40° to 45°, with a rise of 5° by day, will be warm enough to commence with, gradually increasing the amount of warmth when the trees are in flower. Admit air on all favourable occasions, and take care to ventilate the house freely during the flowering period, but cold draughts must not be permitted. Syringe the trees once or twice daily according to the weather, as a dry, close atmosphere would cause the young fruits to drop. Watering must be done with extra care; at no time should the roots suffer for want of moisture. Fumigate the house with a nicotine compound before the flowers open to keep the trees clear of black aphis.

THE ORCHARD HOUSE.—The orchard house should be cleansed thoroughly, and any necessary painting or repairing attended to at once. Arrears of pruning should be completed, as in most cases the fruit-buds are becoming prominent. Trees planted in borders should be carefully washed with an insecticide. Brown scale insects can generally be found on established trees growing in borders although the pot trees may be clear of the pest. The roots will soon be active, therefore the top dressings should be applied to both trees in pots and borders at once. It is not advisable to re-pot trees at this period; this work is best done in the autumn or just before the leaves commence to drop. The compost for top-dressings should consist of loam of a tenacious character, mixed with well-rotted manure, mortar rubble or chalk (some form of lime is necessary for all stone fruits), and sufficient bone meal to be noticeable in the mixture. Make the soil firm with the rammer, and allow space in the pots for future top-dressings. The protecting material should be allowed to remain around the pots for some time to come, or the latter may be cracked by the action of frost. During mild weather take the opportunity to give the borders a thorough soaking with clear water. As a preventive against attacks of green and black aphis fumigate the house twice before the trees are in flower.

TOMATOS.—The winter-fruiting Tomato plants will be benefited by light top-dressings composed of loam, decayed manure, and a little wood ash. Remove all superfluous foliage and expose the fruit to the light. Maintain a warm, buoyant atmosphere, with a free circulation of air. Succession plants in 5-inch pots should be placed in their fruiting pots directly they require more root space. A light compost made with loam, manure from a spent Mushroom-bed, mortar rubble, and a little bone meal will be suitable. Pot the plants moderately firm, and allow space in the pot for subsequent top-dressings. Place later plants near the roof-glass in a warm house having a temperature of about 60°. To provide plants for a further succession sow seed very thinly in pots, pans, or boxes, and germinate them in a temperature of 60°. Directly the seedlings are large enough to handle place them singly in small pots without undue pressure of the soil. Place the plants on a shelf near the roof-glass, and to prevent damping afford water sparingly until the plants are well established. Cold draughts will result in serious injury.

THE ORCHID HOUSES.

By J. COLLIER, Gardener to SIR JEREMIAH COLMAN, Bart., Gatton Park, Reigate.

CYPRIPEDIUM.—Many of the late autumn and winter-flowering Cypripediums are passing out of flower. As soon as possible after blooming the plants should be examined, and any that require re-potting or dividing attended to. It is much the best time to divide the plants when they are being re-potted, as it can then be better seen how to carry out the operation without cutting through the roots, as every root is valuable to a divided plant. After the plants are broken up the strong growths should be selected to make large specimens, and the weaker ones potted into smaller pots. A growth that has flowered is the most valuable for propagating purposes, as it will often break into two or three shoots, whereas a new shoot will complete its growth before giving off other shoots. If it is not desired to increase the stock, plants that require increased rooting space may be shifted into receptacles two sizes larger than those they have occupied. Specimens already in large pots may be re-surfaced with fresh compost, first picking out some of the old soil from between the roots and replacing it with new material. All the strong-growing species, such as C. insigne and its varieties, Sanderae, Harefield Hall, Laura Kimball, and Sanderianum, also hybrids, including C. Thalia, Mrs. Francis Wellesley, Euryalus, Hitchinsiae, Beeckmanii, and Leeanum should be potted in a mixture of three parts good fibrous loam from which all the small particles have been removed, and one part peat or Osmunda fibre, with a sprinkling of crushed crocks to ensure the free passage of water. For smaller plants and less vigorous species, employ more peat or Osmunda fibre, adding a small quantity of chopped Sphagnum moss. The pots should be filled one-third their depth with material for drainage, this in turn being covered by a thin layer of coarse soil. The plants, and especially those that are pot-bound, should be watered thoroughly a day before being disturbed. After taking the plants from their receptacles, remove the drainage and all decayed soil from among the roots, and place them in the pots with the roots spread out. Work the compost between the roots, pressing it firmly and filling the pot almost to the rim. Take care not to break the roots. If the potting material is already moist, these newly potted plants will not require much water, but will be benefited by light sprayings overhead two or three times on fine days. When the roots have penetrated into the compost a liberal amount of water should be afforded them. Where a special house is devoted to Cypripediums the temperature should range between 55° and 60°. With sun-heat it may be allowed to rise 5° or 10°. Cypripedium seedlings should be placed in the warmest house, and potted on as they require it. Thrips are very injurious to these plants, attacking the young leaves. The insects should be destroyed by frequent fumigations.

THE HARDY FRUIT GARDEN

By JAS. HUDSON, Head Gardener at Gunnersbury House, Acton, W.

MORELLO CHERRIES.—In gardens where there is a considerable amount of wall space devoted to fruit trees, the Morello Cherries are frequently left until February before they are nailed or tied. With the shortage of labour the trees will probably be trained in many gardens even later than usual this spring, but so long as the work is finished some time in February no much harm will result. The Morello Cherry is one of the easiest of all wall trees to regulate and train. Strong young shoots from the base should always be retained, whilst old, stubby growths at the extremities of the branches should be cut away. The shoots should be trained in fairly thickly, as fruit-bearing spurs have not to be considered, as in the case of dessert Cherries. If signs of gumming are apparent, a slight coating of Stockholm tar over the affected part will be effectual in stopping the complaint. After the trees have been pruned and trained a winter dressing of liquid Gishurst Compound will assist in destroying the larvae of insect pests. Having done this work, lightly fork that part of the border nearest the trees, and apply at once a liquid dressing of concentrated manure (see last week's calendar) to assist the trees in the stoning period. I have had my best success with this fruit by simply securing the main branches to the wall and allowing all the fruiting wood to hang loose from the wall. The trees may not look quite so tidy as those trained in the orthodox manner, but fruit, not appearance, is the first consideration. I have found also that the fruits keep cleaner under this system. Standard Morello Cherries, after the Kentish system of culture, should be grown more extensively in private gardens. When well cared for these trees carry heavy crops of fruit, and the Cherries ripen somewhat earlier than those on north walls. The weeping form of standard tree is the best to plant; such a tree is easily kept in order by allowing the young shoots to extend and taking out the old, scrubby shoots. See that the main stems are secured firmly after the pruning is finished. Do not place farmyard manure close to these trees, otherwise the growth would be too gross. Those who may not have grown the Morello Cherry in grass orchards should make the experiment. I have seen most satisfactory results under this system of cultivation. May Duke and the Kentish Cherries are also suitable for growing as orchard trees in private gardens. Where the trees have been trained somewhat on the open system, without good results, I would advise the same treatment as is adopted for Morello Cherries, for I have tried it, and found the result satisfactory.

SWEET (OR DESSERT) CHERRIES.—In some gardens the pruning and nailing of Sweet Cherries may not yet have been done. If this is so I would advise that some consideration be given to the extension of growth, so that places bare of fruit-bearing spurs may be furnished with fruiting wood. Although the leaves of these Cherries are somewhat large, yet the growths may be trained fairly closely, as the leaves usually stand out horizontally. Rank, over-luxuriant growths indicate that there is too much manure in the soil. Should it be necessary to cut out gross-growing shoots, coat the wounds with styptic or cutting, and do not on any consideration apply new manures near to the roots, but rather starve the trees into a fruit-bearing condition. If the case be a bad one resort to root pruning.

PLANTS UNDER GLASS.

By F. HARRISS, Gardener to Lady WANTAGE, Lockinge Park, Berkshire.

CARNATIONS.—Cuttings of Carnations that were inserted in November are sufficiently rooted for potting into 5-inch pots. The soil should consist of loam mixed with finely-broken brick rubble and sharp sand. Cuttings rooted later should be potted into 3-inch pots when they are ready for a shift. Recently potted plants should not be exposed to cold draughts, and should be watered with great care. With the lengthening days, old plants will be growing more freely, and it will now be safe to give the roots an increased amount of stimulant. Let the surface soil be carefully pricked up with a pointed stick, and afterwards apply a top-dressing of bone meal and soot. Admit plenty of air when the weather is favourable and use fire heat with moderation. Another batch of cuttings may be inserted if necessary. Plants of Souvenir de la Malmaison Carnations should be kept growing in cool conditions; afford water to the roots very sparingly.

CINERARIAS. Plants of the earliest batch of Cinerarias are coming into flower. If desired they may be grown in a little more warmth to hasten their flowering. The latest plants should be grown in a cool house, using fire heat only in times of severe frosts. Cinerarias need to be watered very carefully at this season; the pots are filled with roots, and the latter may be given diluted liquid manure or soot water occasionally. Examine the plants carefully for aphis, which is easily destroyed by light fumigations with a nicotine compound.

HIPPEASTRUM (AMARYLLIS).—Some of the most promising Hippeastrum bulbs may be placed in a light, warm house. First thoroughly soak the soil with water, then remove a portion of it to make room for a top dressing. The materials for this purpose may consist of loam, leaf mould, manure from a spent Mushroom bed, and sand. At this time of year it is wise to plunge the pots in a hot bed. Very little water will be needed till the plants are in active growth, but they should be sprayed two or three times daily with luke warm rain-water. Other batches of these bulbs may be started at regular intervals.

GLOXINIA.—The first batch of Gloxinia plants may be started into growth. Partly bury the tubers in boxes or pans of finely-sifted leaf mould, and place the boxes or pans on a shelf in the plant stove. When a little growth has been made shift the tubers into 5-inch or 6-inch pots, according to their size. A compost consisting of loam, peat, leaf-mould, finely-broken charcoal, and sharp sand, forms a suitable rooting medium for these plants. See that the pots are clean, and afford ample material for drainage. Seed may be sown now for raising a batch of plants for autumn flowering. The seed is very small, and to ensure it being evenly distributed should be mixed with a little very fine sand before sowing. Cover the seed-pans with a sheet of glass and place them in a propagating pit until the seeds have germinated.

THE FLOWER GARDEN.

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

MYOSOTIDIUM NOBILE.—This fine plant has a name for ill-doing, and it was with some reluctance that a filled a warm corner with a number of strong plants and put others out in a rockery. Last winter we had, but on only one night, a frost of 26° to 29°, which destroyed those on the rockery, but the others recovered, flowered, and made good growth, with large leaves, through the summer. This winter the plants are protected as previously with tiffany sheets, which are lighter than those of canvas. From my experience with the plants grown in pots, it is clear that they are very gross growers. Hence I do not see that in the colder regions it will ever be possible to get results such as are obtained at Enys, or even at Logan House, in Galloway. The more vigorous the growth in summer, it is clear the more liable will the plants be to be cut off in winter.

HERBACEOUS PAEONIES.—The soil should be turned back from the roots of herbaceous Paeonies and a layer of row manure. The best is obtained in parks or meadows; spread evenly upon them, and the soil returned above the manure. Very large clumps are kept vigorous and prolific when annually surface dressed in this manner, cowdung of the kind recommended giving better results than are obtained from any other animal manure.

HELLEBORUS.—The earlier plants of Helleborus have been producing flowers for a long time, the great Christmas Rose (H. niger) having been much finer than usual. Not bigger, perhaps, but certainly with less tinted flowers. The later blooming varieties, if not already surfaced dressed, should be surfaced with any light, friable material. The compost should not merely be placed around the plants, but scattered amongst the leaves as well. Some of the species are very strong growing, and have root systems in proportion. These require much space and very liberal treatment, which results in tall and strong flower-scapes, abundantly furnished with flowers. The less vigorous species should be treated similarly to the true Christmas Roses, and all foliage removed that exhibits tendencies to unhealthiness.

EAST LOTHIAN STOCKS.—No delay should occur in raising plants of East Lothian Stocks if strong, abundantly flowering specimens are looked for. Means should be adopted in moistening the soil never to wet the surface of the compost, as the seedlings are very liable to damp off. Use a brisk heat to induce a rapid germination; but once that has been effected an intermediate or even a cool temperature is to be preferred. The best varieties for general purposes are those of white, mauve, and purple colours. Crimson, if of a good strain, is also worth growing, but there are many strains of dubious reliability in the market.

AUTUMNAL CROCUSES.—The surface soil should be lightly skimmed from about autumn Crocuses, and a layer of fresh material substituted before the current year's foliage begins to shoot; that is, of course, if the plants have been established long enough to need this attention.

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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.*

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Letters for Publication, *as well as specimens of plants for naming, should be addressed to the* **EDITORS, 41 Wellington Street, Covent Gardeu, 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.*

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 39.6

ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, *Thursday*, January 24, 10 a.m.: Bar. 30.2, temp. 53.5°. Weather—Fine.

Food Production by H.M. Forces at Home and Abroad.

In the old-fashioned wars armies were accustomed to live—to a greater or less degree—on the country in which they fought. The national armies of to-day, with their enormous requirements, need the resources of the world for their provisionment. Nevertheless, the longer the war continues and the greater become the demands which the armies make on food and transport, the more are they driven, in a new sense, "to live on the country." But the only way to do this is not to requisition, but to produce, and it is interesting to find that a national army can no longer devote itself solely to the work of destruction, but must undertake work of construction also. It is easy for the critic to protest that the work of food production would be better done if those whose work in life it is to produce food were left in that occupation. Of course it would be better; but the fact remains that none of the combatants in the present war has been able to pursue this better course. Each of the combatant nations has had to drain its man power away from the land, and each has had to return again to the land many of the men which were absorbed into the Army. In this country the carrying out of the programme of food production depends largely on the man power released by the Army. But in addition to this "better way," there is another supplementary method of food production which, when judiciously and cautiously used, should prove of great assistance in providing food and saving tonnage, and that way, of course, is for the armies themselves to become producers of food—to turn the swords into ploughshares. Needless to say, like so many excellent ideas, this one appears by no means easy of application—except to the doctrinaire, to whom all things seem easy. Military duty, frequent movements from place to place, provision of reserves for emergencies, the multifarious duties of road making, water supply, transport, and the like, have all to be taken into consideration. In spite, however, of the difficulties, the British Armies have found it possible to do a large amount of cultivation behind the lines in the various theatres of war. This work began in a somewhat sporadic way, and in many cases more as a means of satisfying our British love of gardening than in response to a recognition of the importance of increasing food supplies. Now, with the evident need for production of food and reduction of tonnage for the carriage of foodstuffs, it is being systematised and extended in the zone occupied by the British Armies in France. What we may call the agricultural activities of the Armies of France fall into three categories: the cultivation of Army gardens, assistance to French cultivators in the British zone, and the establishment of Army farms. The supply of seeds and seedlings for the camp gardens is being assisted by a number of pépinières (nurseries) established by the French authorities, in accord with our own, in convenient distributing centres. In these gardens large numbers of transplantable seedlings are being raised, with the object of supplying the requirements of the many camp gardens which are already in existence, as well as those of new camp gardens which are likely to be established.

The assistance which the Armies in France have given during the past years of the war has been considerable, and is, needless to say, greatly appreciated by the French farmers who have resumed the cultivation of their lands, and who are often sadly short of labour. The third means of increasing production, that of establishing Army farms, is evidently only to be resorted to when, for one reason or another, considerable areas of suitable land are likely, if not occupied in this way, to be left uncultivated. The limiting factor to any such scheme of cultivation is, of course, labour; but we may be sure that the genius for organisation which is shown by the British Army will be able to supply sufficient labour, skilled and unskilled, to bring many acres of unused land into cultivation, and thereby to make a valuable contribution to the food supplies of the Armies. When we turn to consider the Armies at home, it is evident that the first claim on their assistance, so far as food production is concerned, should be for helping farmers short of labour, and we are glad to know that the military authorities are fully alive to the importance of the Army giving all the help possible. Over and above this form of help, the Home Armies are doing notable work in the cultivation of camp gardens. This work, we believe, will be extended during the coming year, and we hope that, by the establishment of seedling-raising nurseries, it will be possible to secure a considerable increase of the areas under vegetable crops. Nurserymen would readily undertake the work of seedling-raising, and the frames and glass in their possession would enable them to do it with rapidity and economy.

The next few months are months of vital importance, for during that time much more land must be brought under extensive and intensive cultivation if Scarcity, now a visitor, is not to become an inmate of our households.

NATIONAL CHRYSANTHEMUM SOCIETY.—The annual general meeting of the National Chrysanthemum Society will be held at Carr's Restaurant, Strand, on February 4, at 6 p.m. It is proposed on this occasion to present the late secretary, Mr. RICHARD A. WITTY, a testimonial in recognition of his services.

"SCOTTISH JOURNAL OF AGRICULTURE."—Under this title the Board of Agriculture for Scotland will issue a quarterly official journal containing articles, notices, etc., relating to agriculture, forestry, and other subjects of rural interest in Scotland. The first number will be published at the end of the present month. The price of the journal will be 6d. per copy, and the annual subscription 2s., or with postage 2s. 8d. Copies may be obtained through booksellers, or direct from H.M. Stationery Office, 23, Forth Street, Edinburgh.

CUNDALL MANOR TO BE SOLD.—The *Times* reports that Lord FURNESS has decided to sell his Cundall Manor estate by auction, and has instructed Messrs. KNIGHT, FRANK and RUTLEY to offer it at an early date. The estate is situated between York and Darlington, and comprises about 1,300 acres, with a good manor house, 10 farms, the village of Cundall, and some well-grown woodlands.

SUGAR FOR JAM-MAKING.—Those who grow fruit, and who are accustomed to use part of it for jam-making, should take note of the announcement made by the Ministry of Food that an allocation of sugar for this purpose cannot be counted on this year. The economical should be able to save a certain amount of sugar from the weekly ration, which is considerably larger than the German ration, and by using the sugar thus saved with glucose and a little saccharin, should yet be able to make a certain amount of jam. We may take it that the announcement is due in part to the probable shortage of sugar, and in part to the fact that a large proportion of our home-grown fruit will be required for pulping, and that all the pulp so made will be needed for jam-making to supply the Army and the civil population. Small fruit growers should therefore keep only such quantities of fruit as they require for their own use, and should make arrangements betimes for bottling or canning that part of their surplus which they cannot make into jam.

FOOD PRODUCTION IN FRANCE.—Three deputies, MM. COSNIER, COMPÈRE-MOREL, and LE ROUZIC, have been appointed by the French Ministries of Agriculture, Reconstruction, and Foreign Affairs respectively, to stimulate and develop food production. Monsieur LE ROUZIC, states the *Revue Horticole*, who was last year very successful in organising the production of Potatos, will now be chiefly concerned with increasing the cultivation of fruits and vegetables.

ONIONS.—Under the title "Controlled Absentees" the *Daily Telegraph* observes that control (as applied to foodstuffs) and disappearance are becoming almost synonymous terms. One of the latest illustrations on the subject is centred around the home-grown Onion. On Mon-

day, the 14th inst., the price of English Onions as fixed by law came into operation. Academically, legally, and so forth, English Onions were 5d. per pound; but it so happened that from the very day that attractive price was to rule there were practically no Onions obtainable except those from foreign lands, of which the price is unrestricted. Growers had ample warning that they were to be limited to 15s. a hundredweight on and after Jan. 14, so they hastened their sales whilst the market remained open and favourable. Most probably there will be a smaller crop of Onions next year. Farmers are not keen to grow them when the prospects of limited prices loom in the distance. Onions are a troublesome crop to raise; the cost of seed is enormously high, and, all things considered, Potatos are more profitable. French Onions have advanced steadily in price. Shopkeepers must now pay up to 35s. and 36s. a hundredweight, first hand, for them; whilst Spanish Onions at Covent Garden work out at an average of 35s. to 37s. for the same quantity. It must be borne in mind that the freight on Spanish Onions is about 30s. a case of approximately 120 lbs. The situation at present is that the public must be prepared to pay at least 5d., if not 6d., per pound for foreign Onions. In the past this vegetable was much too cheap to be appreciated: now that it is scarce and dear many will realise that Dean Swift was right when he wrote:—

"This is every cook's opinion,
No savoury dish without an Onion."

FROZEN POTATOS.—Frozen Potatos should not be discarded, but dried sufficiently to extract the water content. The drying may be done in an ordinary oven at baking heat. The tubers should be sliced and spread out evenly and the oven door left open, leaving the Potatos until they are chip dry. Then they may be kept in a dry place for a considerable time. To use these Potato chips they should be boiled in just sufficient water to produce a mashed Potato result.

PUBLICATIONS RECEIVED.—*Productive Plant Husbandry.* By Karv Cadmus Davis, Ph.D. (Philadelphia and London: J. B. Lippincott Co. Price 7s. 6d. net.

HOME CORRESPONDENCE.

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

DAMAGE TO TREES BY SNOW.—Serious damage was done by the recent snow to trees and shrubs in this locality, principally during the night of Tuesday, the 15th inst., and the following day. Many fine specimens were practically ruined. The trees which suffered most were Birch, Oak, Elm and Scotch Fir, large branches being twisted or snapped in an extraordinary fashion owing to the heavy weight of snow on them. Fortunately, at the time of writing (January 18), the snow is gradually disappearing, and many of the shrubs and small trees are already resuming their natural shape. *E. Beckett, Aldenham House Gardens, Elstree.*

THE STORING OF APPLES.—Mr. Beckett's reference on p. 8 to the often perfect preservation of fallen Apples found covered Beckett's reference on p. 8 to the often perfect preservation of fallen Apples found covered with leaves in the orchard in mid-winter leads logically to the conclusion that the nearest approach to similar conditions is the ideal to be aimed at for the proper preservation of late-keeping Apples. For some years I have kept my latest varieties, such as Bramley's Seedling, Northern Greening, Alfriston and others in the orchard until after New Year's Day. They are carefully stacked in heaps or clamps, of the shape of a Potato pit, on the short grass of the headlands, being placed in position by hand, and all bad or necked fruits rejected. The heaps are then covered with one thickness of brown paper, and over this is placed dried Bracken Fern, or grass to a depth of 1 foot, finishing off with a rough thatching of straw. Late Apples keep perfectly in this manner, and the method is particularly useful when a bumper season overtaxes the fruit-storing accommodation. Another advantage is that during a rainy fruit harvest Apples can be "saved" much more quickly, as boys can build up the clamps almost as quickly as men can pick the fruit, and once they are in position all danger of loss from wind-storms is over. Although it is advisable to leave out any doubtful fruits, yet even if a bad one is overlooked the rot does not spread in the heap to anything like the same extent that it does in a house. I have just taken the variety Alfriston into the fruit-room from the outside clamps, and in 7 or 8 cwt. of fruits there were not 2 stones of bad ones. I always instruct the pickers to drop all deformed, pecked, or badly spotted Apples under the trees, and then, about fortnightly during the season, these and all windfalls are gathered into sacks for the cider mill. Our cider makers paid £3 10s. per ton for this class of rough, otherwise unsaleable, fruit this season. Windfalls always keep much better if left where they fall until they can be sent away. They begin to rot at once if placed in heaps. Apples have kept wonderfully well here this season, and this I attribute to the unprecedented scarcity of small birds last summer. These usually peck a good percentage of the fruits, all of which afterwards rot in the store, besides spreading disease to their neighbours. Nearly all varieties of Apples bore heavy crops last season, the two exceptions here being Gascoyne's Scarlet Seedling and King of the Pippins. *T. E. Tomalin, Boshorough Gardens, Pilmoor, Ireland.*

We have a fairly large fruit room here, but were the Apples to be spread in single layers it would need to be extended to many times its present dimensions. As long ago as 1886, when writing in the *Journal of Horticulture* on "Keeping Apples," among other remarks I wrote are these: "I have proved that Apples keep quite as well banked up in heaps as they do laid out singly." In the same article it is mentioned how the fruits have to be gathered into large baskets, how the fruit is removed off the trees by lifting, not twisting, how the fruit room is freely aired, kept at a low temperature, with windows unshuttered, and how windfalls of late varieties with skins unbroken are also stored. The same methods have been continued to this day. A few days ago the fallen fruits were examined and found still in good condition, and windfalls of Northern Greening and Alfriston in past years have kept into April. An important point in the preservation of late Apples is not to gather them until they are fully matured. *R. P. Brotherston, Tynninghame Gardens, Prestonkirk.*

HORTICULTURAL DUG-OUTS.—Mr. Bowles' remarks on p. 177, Vol. LXII., conveyed to my mind the impression that he regarded some of the temporary buildings used in war as good enough for dwellings at home. There is no mention of the better arrangements for light and ventilation which he now states would be necessary. I thank him for the explanation, but may I ask him would such buildings, even improved as he states, compare well with a properly constructed modern cottage or bothy, and be favourably regarded not only by gardeners but the general public? One can but notice also that the house Mr. Bowles hopes to buy on his return is not to use his own words—"going to be a French dug-out nor a wooden hut." He intends having such a structure for use merely as a retreat, and not to live in. May one hope that if, in the future, Mr. Bowles is connected with the housing of workpeople, he will use as his standard of comfort and hygiene his own residence, and work up to that rather than down to a previously fixed minimum of outlay. *Sydney Lismore, Holm Leigh, Wateringville, Hants.*

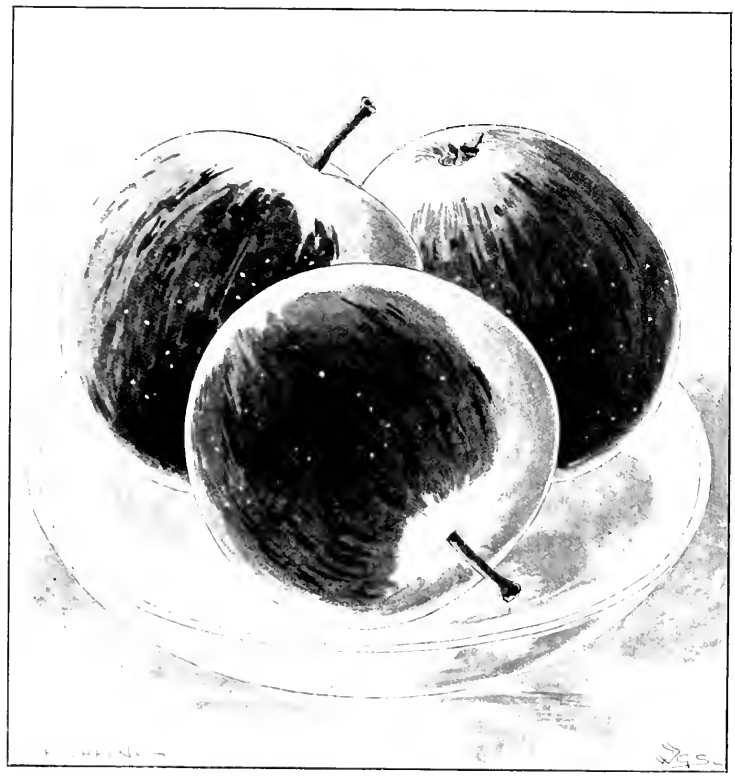

FIG. 17. APPLE WORCESTER PEARMAIN. (See p. 37.)

ON INCREASED FOOD PRODUCTION.

THE SOY BEAN.

JUST now, when all the food possible should be grown, I think it important to draw attention to the value of the Soy Bean, Glycine hispida, often known as Soya hispida (see fig. 18). This summer past, owing to its general economic importance, I have grown a small crop, and am much pleased with the result. How it compares with other Beans I do not know, but I have found the production in the Cambridge Botanic Garden equal to nearly 11 cwt. per acre. I have been interested in the Dutch Brown Haricot Bean distributed by the Royal Horticultural Society, and have grown a small crop of it also. In this case the crop per acre works out at about half that of the Soy Bean, but I refer only to one trial, and have to admit that half of the bed for some reason did not do perfectly well compared with the other half. In a circular just received from the R.H. Society it is said that the Dutch Brown Bean gives a yield as high as 60, and in some recorded cases, 100 fold. I have carefully weighed the quantity of Soy Bean that was sown, and find that the produce has been at the rate of 123 fold, though weight per acre is no doubt the most important consideration. My Soy Bean is of an old stock grown for many years in a small patch on the herbaceous ground. The seeds are black, and I mention this because it is a yellow-seeded form that is imported, and certain other attractive forms can be obtained. This black-seeded Soy, however, I have found much liked, and very satisfactory for table, though probably the yellow or brown might more generally be approved from the point of view of appearance. According to the best of my judgment it has a much better flavour than Haricot Bean. Vilmorin says in *Les Plantes Potagères* that the varieties in China are almost as numerous as the varieties of Haricots in Europe. In this work four kinds are enumerated—ordinary Soy, with yellow seed, the Etampes Soy, the early Soy of Podolia, and early Soy, with brown seed, the last two being the earlier kinds. It may be that the Soy plant in this country must be grown in the shelter of a garden and not in fields, but experiments would settle the question.

The Soy Bean is well known as being used in making the well-known Soy sauce, and this, until a recent time, was almost all we knew, but now it is described as universally useful. It can be eaten just as Haricot Beans are eaten, and is valuable for the oil it contains, which, according to an article in the *Daily Mail* of December 13, 1915, is used in the manufacture of at least fourteen different articles, from salad oil and margarine, to dynamite and soap. Among seventeen other products may be mentioned that of flour, artificial milk, cheese, and coffee substitute. It is said that if Germany is being allowed to import this Bean she is getting food for her men, her cattle, and her guns. The Chinese cultivated the plant for over 2,000 years, chiefly on the plains of Manchuria, and are said to have kept it to themselves. The Japanese apparently have the credit of realising the value and the possibilities of this Bean. The exports from China rose rapidly after 1903, so that now the Bean is second on the list of China's exports, with a value approaching £8,000,000. Germany very soon made enquiries, and, recognising its value almost at once, rescinded the import duty, and installed plant for the Bean in their oil mills, importing the Bean through Vladivostok, often in British ships chartered for the purpose. The yellow form is said to contain more nutritive matter than the other kinds, and the Bean exported is almost exclusively yellow. The quantity of oil extracted varies from 16 per cent. to 19 per cent. Writing in his book on Japan, after a visit to the Bean centres of Manchuria, Mr. Robert P. Porter says: "Only after one has travelled through the region where the Soy Bean reigns supreme, and has seen the wharves and the warehouses, the stations and the platforms, laden with bags of Beans, and noted the thousands of queer-looking stacks with pagoda-like roofs with which the country is dotted, and which serve as temporary storehouses for the produce while awaiting shipment, does one realise that it (the growth of the Bean trade) is not a fable, but a veritable fact in the history of international commerce. . . . And the manifold uses, agricultural and industrial, as well as dietary, to which the Bean can be put, invest this generous vegetable with increasing importance, and the future of the Bean crop with romantic mystery."

FIG. 18.—THE SOY BEAN.

A peculiar point, I note, is the changing shape of these Beans. Before they were quite ripe they were kidney-shaped. When dry, black, and ripe, they became round as a Pea, and on being soaked and cooked, they again showed the kidney-like form. *R. Irwin Lynch, Botanic Garden, Cambridge.*

ALLOTMENTS AT BIRMINGHAM.

IN the early part of last year the Parks Committee at Birmingham secured 630 acres of land, and parcelled it out into 6,280 plots. This year the Committee has obtained an additional 500 acres, which are to be divided into plots of 320 square yards each. This is a reduction of some eighty square yards on the size of the plots allocated last year, as it was noticed that many holders were not able to cultivate the whole of a 400 square yard plot. There is a keen demand for the new allotments, and further land will doubtless be acquired. It is computed that there will shortly be about 12,000 holders in and around the city. The local Press is doing its best to encourage this excellent movement. In particular, the *Daily Post* is raising a large fund out of which to provide the means for judging the allotments, holding a show of produce, and giving prizes for the best-cultivated plots. The Parks Superintendent, Mr. W. H. Morter, has the management of the scheme.

A LITTLE-KNOWN VEGETABLE.

CHENOPODIUM AMARANTICOLOR forms an excellent substitute for Spinach, and is, by many who have tasted it, preferred to that popular vegetable. The *Revue Horticole* describes its culture in France in an interesting article, stating that it was discovered about forty years ago, near Marseilles, by Honoré Roux, and placed in commerce in 1910 by Messrs. Vilmorin, Andrieux and Co. This plant is easily grown in almost any soil, but prefers a fair admixture of calcareous matter; it also needs plenty of warm sunshine. It is not affected by drought, which makes it an excellent subject for warm districts, like those around Marseilles, where Spinach is apt quickly to go to seed. It is being grown, however, with the greatest possible success, on an experimental farm near Juvisy (not far from Paris), by Monsieur Louis Sellé, gardener to the Union of Foreign Colonies. He states as follows: "The culture of the Chenopodium is of the easiest. I sow the seeds on April 15, pricking the seedlings out into open ground on the 25th of the same month. When the plants are sufficiently strong, usually about May 15 or 20, I transplant them to their permanent quarters. The plants do equally well in a dry or a damp place. Last year we commenced cutting in July, and the crop continued available until the first frosts."

CHINESE CABBAGE (see p. 27).

I BECAME acquainted with this vegetable through a note in *The Daily Chronicle*, where it was called Chinese or Celery Cabbage, and stated to be largely grown in Canada. I have since found that the plant is also known as Pe'tsia and Shantung Cabbage. It is the quickest-growing vegetable in the open with which I am acquainted. Seed sown out-of-doors on May 10 last season, between Roses, gave plants ready for use on July 20, each head weighing from 4 to 6 lbs. In shape the plant is somewhat like a Cos Lettuce, and the flavour when boiled somewhere between Lettuce and Cabbage. The vegetable was not highly appreciated by my employer, but in these days of limited food, the plant is well worth the serious consideration of all cultivators. If this vegetable could be grown for cutting from the middle to the end of May, from seed sown early in March, it would probably be useful as food for milch cows and other animals requiring green food, when grass is not always plentiful. Plants raised from seed sown in a border facing west on September 10 last appear to have withstood the recent severe weather quite well, although the young plants have been lifted by the action of frost, and the soil about them will need treading when weather permits. I am wondering if the plants of this sowing will go to seed instead of forming heads. Slugs are very partial to the young plants. *J. E.*

A PRIZE ALLOTMENT.

THE Rev. George Jack, St. Mungo's, South Leith, has won the Gold Medal of the Scottish Horticultural Association for the best allotment of 1917 in Edinburgh and Leith. The area of his allotment is one-twentieth of an acre. The total weight of produce amounted to 1,530 lbs., of which 783 lbs. consisted of Potatos. The market value was rather more than £8, and Mr. Jack's outlay was £3 3s. 4d.

SOCIETIES.

ROYAL HORTICULTURAL.

Scientific Committee.

JANUARY 15. *Present:* Mr. E. A. Bowles, M.A. (in the chair), Col. H. A. Rawson, Messrs. W. Hales, W. C. Worsdell, H. A. Rawson, E. J. Allard, J. W. Odell, and F. J. Chittenden (hon. secretary).

Town refuse as manure.—Mr. Chittenden said he had secured an analysis of a sample of town refuse similar in appearance to that shown by Mr. Hudson at the last meeting, which showed a high content of lime, about 2 per cent. phosphate, and 1¼ per cent. nitrogen. Mr. Odell said he had also an analysis, and his showed a lower percentage of all these manurial substances than the one referred to. Experiments are being made at Wisley, Rothamsted, and Long Ashton to ascertain its manurial value.

Variation in shade of French Beans. Mr. Fraser showed seeds of the variety Mont d'Or, remarking upon the difference in shade of seeds of the same harvest. This difference is common in French Beans, and appears to be the result of differences in ripeness and of weather effect rather than of a constitutional character.

Oil-bearing seeds for cultivation in England. At the instance of Dr Keeble a discussion took place upon the kinds of plants which might be grown for their oil in England. They appear to be few, and none seems to produce a palatable oil. The oil bearing Flax, Rape, and other species of Brassicas, Sunflowers, Coreopsis, with perhaps some Malvaceous plants such as Malope and Lavatera, seem practically the only ones which are likely to succeed as oil producing plants in this country.

NATIONAL DAHLIA.

JANUARY 21. The annual general meeting of the National Dahlia Society was held on Monday last at the offices of the British Wholesale Florists' Federation, 35, Wellington Street, Strand. The president, Mr. Reginald Cory, was in the chair, and presided over a small attendance of members. The Committee's report for the previous year, which was read by the hon. secretary, stated that the membership was satisfactory, and that the exhibition held on September 11 had been a complete success. Other matters were referred to, including the awards made by the Floral Committee to new varieties, the competition for the Cory Cup, and the regretted loss by death of three members, Messrs. J. S. Stredwick, E. J. Such, and J. L. E. Lowles. The Committee had decided to discontinue the holding of conferences and the publication of the Dahlia Year-book. Lists of new varieties and selections of the best sorts in the various types were compiled and published in the Schedule for 1917. Regarding the Cory Cup competition, the conditions to be observed in future had been simplified. With regard to finance, the income of the Society during 1917 was £31 0s. 5d., and there was a balance in hand at the end of the year of £17.

The report was adopted by a unanimous vote.

The next business was the election of officers. Mr. Reginald Cory was reappointed president, Mr. J. Cheal chairman, Mr. J. P. Riding hon. secretary, and the other officers were also re-elected. Messrs. H. Stredwick and A. E. Vasey were appointed to two vacancies which existed on the Committee. The sum of £10 was voted as an honorarium to the hon. secretary in recognition of his services.

The date of the annual exhibition was fixed for Tuesday, September 10, to be held in conjunction with the Royal Horticultural Society's fortnightly meeting in the Drill Hall, Buckingham Gate, Westminster.

SCOTTISH NATIONAL UNION OF ALLOTMENT HOLDERS.

JANUARY 12. The first meeting of this Society was held at Glasgow on the 12th inst. Mr. James Scott presided over a good attendance of representatives from different parts of the country. Satisfactory accounts of the progress made since the preliminary meeting were given, but regret was felt that the Glasgow Federation had not affiliated with the Union. The draft constitution was submitted and agreed to with a few amendments. The following office bearers were appointed. President, Mr. John Hynd, Dunfermline; vice presidents, Councillor Mackenzie, Bo'ness, and Mr. Orr, Hamilton; secretary, Mr. Archibald W. Fisher, of J. L. Hill, M'Dougall and Co., Hill Street, Edinburgh; treasurer, Mr. J. M. Campbell, Falkirk.

BRITISH WHOLESALE FLORISTS

JANUARY 14. The first annual general meeting of the British Wholesale Florists' Federation was held at Essex Hall, Strand, on Monday, the 14th inst., Mr. Geo. Monro, junr., presiding. The report of the committee and statement of accounts were presented. The income for the year 1917 was £342 2s. 6d., representing ordinary income by subscriptions, £191 10s.; and donations to the promotion fund £150 12s. 6d. Current working expenses were £192 14s. 2d., and £139 16s. was spent on offices, furniture, advertisements, and other initial expenses. The president, in presenting the report, referred to to the death of Mr. Walter T. Ware, who was a generous supporter of the Federation from its institution in March, 1917. Mr. Monro pointed out that members had devoted over 50 per cent. of their open land, and much of their glass, to food production. Good work had been done in connection with the British bulb growing industry, the Corn Production Bill, railway transport, and vegetable seed production, and a system of recording the exact position of wholesalers and others connected with the flower trade had been instituted.

The report and financial statement were adopted; Mr. Geo. Monro junr., was re-elected president; Messrs. Geo. Cobley and Co., auditors; and the committee was re-elected with the addition of Mr. W. T. Mason and Mr. F. J. Forster, Covent Garden, to fill vacancies. The question of instituting a Florists' telegraph delivery scheme was discussed, and this raised a further point of extending the scope of the Federation so as to include the retail florists, and thus have one large, strong body representing the flower trade. The matter was referred to the committee for consideration, and report to a special general meeting, the general feeling being in favour of including the retailers. Mr. Monro expressed the hope that a Federal or Central Horticultural Council might be established.

SCOTTISH HORTICULTURAL.

JANUARY 15. The annual meeting of this association was held in the Gould Hall, 5, St Andrew Square, Edinburgh, on this date, Mr. J. Highgate, vice president, in the chair. The ordinary revenue account showed a deficit of £37 1s. 10d., and there was a decrease in capital of £16 19s. 3d. The Horticultural Institution Fund showed an increase of £68 4s. 5d. The Marquis of Linlithgow was re-elected honorary president; Mr. Robert Fife was elected president; Messrs. J. T. Chisholm, Edinburgh and East of Scotland College of Agriculture, and D. T. Johnston, Dalmeny Gardens, were elected vice-presidents. Seven councillors were elected in place of those retiring. The four small exhibitions which it was proposed to hold in conjunction with the monthly meetings in 1917 had to be abandoned, but prizes were awarded for the best allotments.

ROYAL CALEDONIAN HORTICULTURAL

JANUARY 9. The annual general meeting of this society was held in Dowell's Rooms, 13, George Street, Edinburgh, on this date, Mr. M. Hattie, vice president, in the chair. The accounts showed a balance of income over expenditure of £83 4s. 11d., and, after allowing for depreciation on investments, a decrease in capital of £90 5s. 1d. Lord Elphinstone was re-elected president, Mr. E. Dawson was elected vice-president, and Messrs. Thos. Smith, Stranraer, Wm. Muir, Linlithgow, and Geo. Anderson, Whittinghame Gardens, were elected to vacancies on the council.

CROPS AND STOCK ON THE HOME FARM.

How to Deal with Couch Grass.

THE hurried ploughing up and seeding with Oats of old Sainfoin leys last spring is, I fear, answerable for much land being badly infested with Couch grass. The adverse weather of last September delayed the harvest, which, in its turn, delayed until it was too late in the autumn any operations for the eradication of this pestilent weed.

The correct manner of dealing with a Couch crop in an Oat, Barley, or Wheat stubble, is to plough the land, but not too deeply, as soon as possible after harvest, thoroughly burying the surface grass. As soon as this grass decays, choose fine weather, and "run back," which means plough in the same furrow, thus exposing the original surface to sun, air, and wind. When the soil has lain long enough in that position to become dry, plough across the furrows, disintegrating the Couch as much as possible. With a continuance of dry weather use the drag often, to get the Couch on the top, collect it in heaps with chain harrows, and burn it as fast as possible. When the first batch of Couch has been cleared, plough again, repeating the dragging process and burning until the bulk of the weed has been cleared.

The months of April, May, and June are often favourable for cleansing land from Couch. For instance, a stubble ploughed in the autumn too late to do more at that season, will be in a good condition to tackle in March or April should the weather be dry. Plough sufficiently deep to move all the Couch, but no deeper, as a greater depth of soil would hamper the work of cleaning.

Repeat the process advised of dragging and burning in small heaps. Large fires are more satisfactory. This is, however, not permissible, owing to the order governing lights in the open at night. When one batch of Couch is cleared plough again; the oftener the land is ploughed the more thorough will be the cleansing process and the better the cultivation for the succeeding crop.

If the cleaning is done in June, Swedes may be sown, Turnips in July and early August, to be followed in spring with Oats or Barley. If Wheat is required in the particular field, sow with Mustard early in August, plough in this crop when about 2 feet high at the end of September or early in October, and sow with Wheat at once.

Or, instead of Swedes or Turnips, sow with Rape or Kale and feed these to sheep in October, plough at once, and sow with Wheat. Another plan may be adopted after cleansing the land if Wheat is required and no sheep available for clearing the Rape or Kale. Keep the land in summer fallow, repeatedly ploughing it, give a dressing of farmyard manure in September or October at the rate of 20 tons per acre, plough at once, pressing the soil if light in texture, and sow the Wheat forthwith. *E. Molyneux.*

Obituary.

ALEXANDER GRIGOR.—On Monday, 21st inst., there were laid to rest in Allenvale Cemetery, Aberdeen, the remains of Mr. Alexander Grigor, who for many years took a prominent part in horticulture in Aberdeen and the north of Scotland. He commenced his professional career in the service of Mr. John Gordon, of Craigmyle, and later was appointed gardener at Kincardine Lodge, Aberdeenshire, from whence he went to Fairfield, Aberdeen, where he was head gardener for the long period of 30 years. On the death of Mr. Gill, the proprietor of Fairfield, Mr. Grigor was appointed managing gardener at Duff House, Banff, where he had been for the past eight years. Mr. Grigor was a keen supporter of the Royal Horticultural Society of Aberdeen and the North of Scotland Horticultural Association. He was 72 years of age, and is survived by his widow, six sons, and three daughters. His eldest son, John, has been for many years gardener at Seapark House, Forres, whilst Richard is gardener at Dalswinton, Dumfries.

MARKETS.

COVENT GARDEN, January 25.

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

	s. d.	s. d.
Aralia Sieboldii, per doz. ...	5 0– 6 0	
Asparagus plumosus, per doz. ..	10 0–12 0	
— Sprengeri ...	8 0–10 0	
Aspidistra, green, per doz. ...	30 0–36 0	
Begonias, Gloire de Lorraine, 48's, per doz. ...	18 0–24 0	
— 60's	7 0– 9 0	
— 72's	5 0– 6 0	
Cacti, various, per tray of 15's ...	4 0 —	
— per tray of 12's	5 0 —	
Cocos Weddelliana, 48's, per doz. ..	18 0–30 0	
— 60's, per doz....	8 0–10 0	
Cyclamen, 48's, per		
Daffodils, single, on bulbs, per doz.	3 6– 4 0	
Ericas, hyemalis ... alba 48's ...	d. s. d. 18 0–21 0	
— melanthera, 48's	36 0–42 0	
Ferns, in thumbs, per 100... ...	12 0–15 0	
— per 100, in small and large 60's	24 0–30 0	
— in 48's, per doz.	7 0– 8 0	
— in 32's, per doz.	15 0–18 0	
— choicer sorts, 48's, per doz ..	10 0–12 0	
Genoma gracilis, 60's, per doz... larger, each ...	6 0– 8 0 2 6– 7 0	
Kentia Belmoreana, per doz. ...	15 0–18 0	
— larger ...	30 0–60 0	
— Forsteriana, 60's	8 0–10 0	
Lilium lancifolium rubrum ...	24 0–30 0	
— — album ...	24 0–30 0	

REMARKS.—Not much business is being done in this department. The plants chiefly consist of a few batches of Ferns, Palms, Begonias, and Daffodils on bulbs

Cut Flowers, &c.: Average Wholesale Prices

	s.d. s.d.		s.d. s.d.
Arums— — (Richardias), per doz. bl'ms.	5 0– 7 0	Liliums, con.— — lancifolium album, long ...	3 6– 4 0
Azalea, white, per doz. bunches ..	9 0–10 0	— — rubrum, per doz. long ...	5 0– 6 0
Camellias, white, per. doz. ...	3 6– 4 0	— — short, per doz blooms ...	3 6– 4 0
Carnations, per doz. — blooms, best American var.	4 0– 5 0	Lily-of-the-Valley, per doz. bun ...	36 0–42 0
Chrysanthemums— — white, per doz. blooms...	6 0– 8 0	Narcissus, Grand Primo per doz. bun	12 0–15 0
— white, per doz. bunches	48 0–60 0	— Soleil d'Or	10 0–15 0
Croton leaves bun. ..	3– 1 6	Orchids, per doz.:— — Cypripediums	3 6– 4 0
Daffodils, s... v... per doz. bun. ..	10 0–15 0	Pelargoniums, double scarlet, per doz. bunches ...	12 0–18 0
Freesia, per doz bun.	6 0– 8 0	Roses, per doz. blooms—	
Heather, white, per doz. bun....	6 0– 9 0	— Richmond	12 0–15 0
Lilium longiflorum, long	5 0– 5 6	Snowdrops, per doz bun.	6 0– 8 0
		Violets, per doz. bun.	6 0– 8 0

Cut Foliage, &c.: Average Wholesale Prices.

	s.d. s.d.		s.d. s.d.
Adiantum (Maiden hair Fern) best, per doz. bun...	8 0–10 0	Berberis, per doz. bun.	5 0– 6 0
Asparagus plumosus, long trails, per half-dozen	2 6– 3 0	Carnation foliage, doz. bunches...	4 0– 5 0
— — medium, doz. bunches	18 0–21 0	Cycas leaves, per doz. ...	3 0– 6 0
— Sprengeri ...	10 0–15 0	Ivy leave, per doz. bunches... ...	2 0– 2 6
		Moss, gross bun...	7 0– 8 0
		Smilax, per bun. of 6 trails	2 0– 2 6

REMARKS.—Chrysanthemums are gradually disappearing. The supply chiefly consists of spray white Heston, and prices remain firm. Home-grown Daffodils are increasing in quantity, and prices are lower. The varieties offered are Golden Spur, Emperor, and Princeps. The supply of Carnations is also increasing, and these flowers are offered at cheaper rates. Larger consignments from the Channel Islands are being received about three times weekly. Most consignments are arriving in good condition. White Narcissus Grand Primo are in most demand. A few boxes of Paper-white Narcissus from Scilly are soon bought at high prices. Other sorts coming to hand in larger quantities are single Daffodils and yellow Narcissus Soleil d'Or. A few boxes of Star of Bethlehem (Ahlum), Sweet Peas, and Freesia are also being received from Guernsey. A few blooms of Rose Richmond (new crop) are selling freely at high rates. Several boxes of Snowdrops reached the market to-day.

Vegetables: Average Wholesale Prices.

	s.d. s.d.		s. d. s.d.
Artichoke, Chinese (Stachy) per lb.	1 0– 1 3	Leeks, per doz. bun.	4 0– 6 0
— Jerusalem, per ½ bushel	2 6– 3 6	Lettuce, Cabbage, per doz. ...	2 0– 3 0
Asparagus (English), per bundle ...	12 0–14 0	Mushrooms, per lb.	2 6– 3 0
— (Paris Green), per bundle ...	9 0–10 0	Mustard and Cress, per doz. punnets	1 0– 1 3
Beans:— — French (Channel Islands), per lb.	3 6– 4 0	Onions, spring, per doz. bun. ...	4 0– 6 0
Beetroot, per bus.	3 0– 4 0	— Valencia, per case (4 tiers) ..	38 0–43 0
Brussels Sprouts, per ½ bus. ...	2 0– 3 0	— — (5 tiers) ...	38 0–43 0
Cabbage, per tally	4 0– 6 0	Parsnips, per bag ..	4 0– 7 0
Carrots, new, per doz. bunches ...	5 0 —	Peas, per lb. ...	2 0 2 6
— per bag	3 0– 4 0	Potatos, new, per lb.	1 0– 1 3
Cauliflowers per doz	4 0– 6 0	Radishes, per doz. bunches ...	1 0– 1 6
Celeriac, per doz....	5 0– 6 0	Rhubarb, forced, per doz.	2 0– 2 3
Celery, per bundle	2 6– 4 6	Savoys, per tally ...	10 0–12 6
Chicory, per lb. ...	0 10 1 0	Seakale, per punnet	2 3 2 6
Cucumbers, per doz.	10 0 14 0	Shallots, per doz. lbs.	7 0– 8 0
Endive, per doz ...	3 0– 5 0	Spinach, per bus....	4 6– 6 0
Garlic, per lb. ...	0 8 —	Turnips, per bag ...	3 6– 6 0
Greens, per bag ...	2 0– 4 0	Turnip tops, per bus.	2 0– 3 0
Herbs, per doz bun.	4 0– 8 0	Watercress, per doz.	0 8 0 10
Horseradish, per bun.	3 0– 5 0		

Fruit: Average Wholesale Prices.

	s.d. s.d.		s.d. s.d.
Almonds, per cwt	150 0–170 0	Lemons, per case...	55 0– 60 0
Apples:— — cooking, per bus.	1 8 0–2 5 0	Nuts, Barcelonas, per bag ...	140 0 —
— dessert (English), per ½ bus	8 0–16 0	— Brazils, new, per cwt. ...	160 0 —
— Russets, French, in waxed cloth 60 to 70 lbs. ...	36 0 —	— Cob, per lb. ...	1 2– 1 3
Dates, per box ...	1 4–2 0	Oranges, per case	65 0–100 0
Grapes, Black Alicante, per lb.	2 0– 3 0	— navel, per case	60 0–65 0
— Almerias, per barrel (4½ doz. lbs.) ...	4 0–7 0 0	— Tangerines, per box	2 6–5 5 0
— Canon Hall, per lb.	4 6– 9 0	Pears, per ½ bus. ...	5 0–10 0
— Gros. Colman, per lb ...	2 0– 4 0	— (French), Passe Crassane, per doz	10 0–16 0
		Tomatos, English, per 12 lbs ...	15 0–18 0
		Walnuts, French, kiln dried, per bag	23 0–100 0

REMARKS. The bulk of English Apples consists of the following varieties: Bramley's Seedling, Duncelow's Seedling, Lane's Prince Albert, and Newton Wonder. The best grades are realising as much as 28s. per bushel. There are also weekly importations of French Russets, in cases from 60 to 70 lbs. weight. A fairly good supply of Grapes is reaching the market daily, both Gros Colman and Black Alicante. Almerias are also on offer. The following forced vegetables are now obtainable:—Asparagus, Seakale, new Potatos, Mushrooms, Peas, Cucumbers, Dwarf Beans, and Rhubarb. The chief Onions on offer are Spanish and French, very few English (if any) are offered. The market is fairly well supplied with ordinary vegetables for the season of the year. *E. H. R., Covent Garden Market, January 25, 1918.*

GARDENING APPOINTMENT.

MR J. TURK, for 31 years Gardener at Pontefract Lodge, near Hertford, as Gardener to ALBERT BARRETT, Esq., Totteridge Park, Totteridge.

ANSWERS TO CORRESPONDENTS.

APPLES TURNING SOFT AND ROTTEN: *J. C. D.* The two Apples have all the appearance of having been frozen. Some known to have been frozen have gone soft and rotten in precisely the same manner.

FIGS FOR MARKET: *Enquirer.* The varieties of Figs grown chiefly for market are Brown Turkey and White Marseilles as earlier varieties, and Negro Largo, Bourjassotte Grise, Bourjassotte Noire, and Rouge Noire as mid season and late sorts. The principal district where they are grown is Worthing and the surrounding neighbourhood. The style of house depends largely upon the system to be adopted, but as a rule span-roofed houses are best. It no forcing is contemplated it is not necessary to provide bottom heat. The best kind of house is the type used by Messrs. Rivers and Sons, Sawbridgeworth, for growing pot fruit trees. These are of simple construction, cheaply built, and durable, whilst the system of ventilation cannot well be surpassed, and you will do well to inspect these houses. It is a matter of choice whether the plants be grown in pots or planted out. If planted out it will be some three years before an average return may be expected, but from thence onwards the fruits may be larger than those grown in pots. Considerable information on the cultivation of Figs was given in our columns in the weekly notes on "Fruits Under Glass" last year. One essential of sending Figs to market is to gather and pack them whilst they are still firm, but well coloured. Careful packing is most important, and they travel best in what are termed "shallow handles."

MEALY BUG ON VINES: *Constant Reader.* Since you have tried most of the approved remedies you might try gas tar, as recommended by Mr. F. A. Edwards in our issue of October 25, 1913. He said: "On taking charge of the gardens here last autumn I found the Grapes quite white with mealy bug; they had to be washed before being sent to table. The vines were in a weak state, and had suffered badly from mildew. I cleaned off all the loose bark, especially round the spurs, and scrubbed the rods with a scrubbing brush, using a mixture of soft soap (2 ozs.) and sulphur (2 ozs.) in a gallon of water. The vinery was then well scrubbed with soft soap and water, and afterwards syringed with paraffin wherever it could be used with safety. The walls were whitewashed with hot lime, and the rods painted with the gas tar mixture, only the eyes and last season's wood being left. The tar was perfectly fresh, having been obtained from the gasworks only the day before. The mixture was put on in a stiff paste. The vines still look very blank, but the crops have suffered no harm. My employer told me a few days ago that they had not had such good Grapes for twenty years. I consider the gas-tar method both cheaper and safer than fumigation with cyanide of sodium."—*J. P.* In our issue for December 27, 1913, you will find a note on the subject by Mr. J. G. Blakey, Holmwood Gardens, Redditch, who has made a special study of destructive insects. For a description of how to fumigate with cyanide, see the issues for November 8, 1913, p. 184, April 26, 1913, p. 280, and February 17, 1912, p. 101.—*G. B. G.* See last part of reply to *J. P.*

NAMES OF PLANTS.—*Correspondents not answered in this issue are requested to be so good as to consult the following number.*

A. C. H. Psidium Cattleianum (Purple Guava).

ONIONS KEEPING BADLY: *H. B.* Probably your gardener is correct. Onions which are required for late use should not be given sulphate of ammonia or any other stimulating manure unless the ground is too poor to develop moderate-sized bulbs. The autumn of 1917 was not favourable to the ripening of Onions, and especially of late-sown plants. Onions grown on comparatively poor soil keep much better than those grown on ground of a rich nature. Deep cultivation is necessary, and any manure which is applied should be dug in at the time of trenching.

ONION SETS: *Herts.* You need not hesitate to plant the small Onions as sets. Select clean bulbs, remove the loose skins, and rub the bulbs with dry sulphur. Plant in an open part of the garden, and sprinkle the drills with soot previous to inserting the bulbs. If the ground is of a cold nature, a light dressing of dry lime may be applied before the surface is broken down.

RHODODENDRONS: *E. W. C.* Regarding the pruning of Rhododendrons, you need have no fear in doing what is necessary to keep the plants within bounds. That excellent variety, Pink Pearl, makes very straggling growth, and without pruning would become leggy and of unsightly appearance. Nearly every year some of the longest and barest shoots have to be cut back immediately after the plant has flowered. This causes growth to appear immediately below the cut, which helps to fill up the centre of the plant and make it bushy. This kind of pruning can be adopted in the case of any variety, but care must be taken that too many shoots are not taken from the same bush in one season, as this would adversely affect its flowering the following year. Hardy Heaths should also be pruned immediately after flowering. As a rule, they take kindly to pruning, and quickly make fresh growth; but we cannot give you detailed advice without knowing what sorts you grow, in what position they are growing, nor what height you wish them to be.

SHOT-HOLE FUNGUS: *W. G.* Shot-hole fungus, Cercospora circumcissa, attacks other stone fruits than Peaches. The disease may be arrested by spraying with the ammoniacal solution of copper carbonate at the time when the leaves are first expanding, and repeating the spraying at intervals. Bordeaux mixture should not be employed, as this specific is harmful to the leaves of Peach trees.

SUGAR BEET: *R. W. B.* There is no difficulty in growing this crop, but rich soil and an open position are necessary. Sow in drills made 2 feet apart and thin the seedlings to 1 foot apart in the row. Sugar Beet is not generally regarded as a garden crop, but it is listed by some seed firms, including Messrs. Ryders, St. Albans, who published a small pamphlet on the cultivation and uses of the plant.

Communications Received (Oliver Morgan)—C. W. M.—Potato Grower (please send full name and address)—S. M.—C. D.—R. W. T.—J. A. P.—H. M. V.—A. Bros.—L. C. R. N-E.—An Amateur Gardener—C. W. F. G.—R. J. E. M.

THE

Gardeners' Chronicle

No. 1623.—SATURDAY, FEBRUARY 2, 1918.

CONTENTS.

ILLUSTRATIONS.

TULIP SPECIES.

NO gardener who values his peace of mind should attempt to tackle the difficulties that underlie the nomenclature, the relationships, and the classification of the wild species of Tulip. Herbarium botanists have apparently given them up in despair, and this can hardly surprise anyone who has tried to find specific characters on which to base a sound classification of the various members of the genus. The present notes are intended rather to point out the inherent difficulties of the subject than to suggest solutions of them.

In the first place, the constituent parts of a Tulip are conspicuously few in number, and the opportunities for finding specific differences are correspondingly scanty. The bulb, the leaves, the stem, and the flower are practically all we have upon which to rely, for the capsules, and especially the seeds, of the different species are scarcely, if at all, distinguishable.

Let us first take the bulb, and, though there are differences, he would be a rash man who would undertake to sort out a number of species by their bulbs alone. Among other plants, for instance among Irises, it is easy to separate a number of species by their rootstocks alone, for no one could mistake the pink-fleshed rhizome of I. Pseudacorus or the green-skinned rhizome of I. Milesii for those of any other species. Among Tulips, the diagnosis is by no means so simple. It is easy, of course, to separate the bulbs of certain groups, such as Tulipa Greigii and T. Kaufmanniana, from those of such Balkan species as T. Hageri and T. Orphanidea, but to separate the bulbs of the several members of each group is practically impossible.

Stress is sometimes laid on the hairiness or smoothness of the inner surface of the outer skins of the bulbs, but though it is easy to distinguish such intensely woolly coats as those of T. praecox and T. montana, it will also be found that nearly every Tulip bulb produces some hairs on the inner side of its outer coat, even if the degree of hairiness varies among individuals of the same species. Some gardeners say that the bulbs, which have very woolly coats in the wild state, become less woolly under cultivation—a statement which does not agree with my experience, and of which more definite proof is required before it is accepted as a fact. At any rate, bulbs of T. praecox are still clothed in densely woolly coats after several years of cultivation in this garden.

Anyone who has cultivated a number of bulbs of Tulip species must be aware of the extraordinary extent to which the leaves may vary both in shape and size, as well as in number. This is certainly the case among stocks of collected bulbs, imported direct from Central Asia. Some leaves are pointed and some rounded, some long and narrow, others so short and broad as to be practically circular, and I do not think any close observer would venture to draw what he considered a typical leaf of T. Kaufmanniana, T. Greigii or T. Fosteriana. I remember seeing, on my last visit to Haarlem, a large bed of collected bulbs of T. Fosteriana in full bloom, and I was struck by the fact that some bulbs had very glaucous leaves, while in other cases the foliage was of a bright, vivid green. There were likewise variations in the flowers of these collected bulbs, but Mr. Hoog agreed with me that he was unable to couple any difference in the leaves with any variation in the flowers. It was therefore quite impossible to differentiate the plants into one or more sub-species. They were obviously all T. Fosteriana, but it would be extremely difficult to draw up an adequate diagnosis of this species.

The number of leaves produced by the bulbs of different individuals of the same species is apt to vary. I have never seen a flower stem produced when there was only a single leaf, but, on the contrary, it is extremely rare for a bulb, which produces two leaves on the same axis, not to flower, though it does sometimes happen that immature or young bulbs seem to exhaust their energies in the effort of producing a second leaf and a stem, and thus fail to develop the flower, of which, however, some rudiment is always apparently present. Some species, such as Hoogiana, and especially Schmidtii, produce quite a number of leaves, set close together rather high up on the stem, a fact which seems to indicate that the bulbs should be planted deeply, otherwise the plants are apt to be top-heavy and to snap off at the ground line. Botanists sometimes describe Tulips as having a definite number of leaves, but if they would carefully count those on a number of specimens, some strong bulbs and some weak, they would see, I think, that the number is never constant. For instance, T. sylvestris usually has three or four leaves, but a strong bulb produces five, while T. Sprengeri seems to flower equally well on stems that bear three, four, or five leaves.

Of the known species of Tulip, only Greigii and the nearly related Micheliana are supposed to have brown markings on the leaves. These are very vivid when the leaves first appear above ground, but soon fade to a greater or less extent, so that in herbarium specimens they may easily be absent altogether. Yet I have one bulb of T. Fosteriana, which I found by chance among a number sent from Haarlem to a neighbour's garden, which always produces leaves faintly but distinctly marked with longitudinal brown streaks.

Nothing could be simpler nor less characteristic than the ordinary Tulip stem. It is true that it may be quite smooth or minutely papillose or hairy, and that attempts have been made to separate species on this ground, but that this character is unreliable is shown, for instance, by T. praestans, in which the whole plant is usually covered with minute hairs, but of which occasional specimens are entirely smooth, though they differ in no other respect.

T. praestans is interesting in another way, and seems to afford evidence that there are in the wild state small local races of Tulips, most of which can be included under a specific name, and of which the outlying groups form connecting links between the species. It is apparently a fact that the original importation of bulbs to which the name praestans was given, contained nothing but specimens with bright red filaments to the anthers and flowers without any trace of basal blotch on the segments. About 1912 or 1913 Mr. Van Tubergen, wishing to get a further stock of bulbs of T. praestans, arranged with a collector to go to the identical district in which the species had been originally found, and very generously sent me specimens of the bulbs on their arrival. Curiously enough, every one of these proved to have black filaments to the anthers and a faint basal blotch of black, which fades entirely away when the flower has been open for a few days.

Colour is notoriously no safe guide to specific difference in flowers, and Tulips are no exception to the rule. One instance, that of T. praestans, has just been given, and it is only necessary to raise T. Kaufmanniana from seed to discover that the marking on the backs of the petals varies in almost every instance. They may be almost white, or pass through grey and pale blue to pink and deep red. Moreover, there are sometimes scarlet blotches near the base on the inner surface of the segments, which latter may be white in the upper part and yellow below, or wholly yellow, or even wholly bright scarlet. T. Greigii may apparently have a pure yellow base or a black base, or a base of any combination of patches of the two colours. The anthers, again, and the pollen may be yellow or purple-grey, or almost black, while the flowers themselves are usually scarlet, but not infrequently yellow blotched with scarlet.

Another puzzle for the herbarium botanist is provided by the Tulips of the Balkan group to which such names as Orphanidea, Hageri and boeotica have been given. Some of them are described by the authors of the names as having differences in the relative proportions of the filaments and anthers. On examining a number of flowers last April, I was inclined to think that some help in classification might be found in this character, but, having one morning carefully marked some plants that had long, narrow anthers, to distinguish them from others with short, broad anthers, I was astonished on returning to the plants in the afternoon to find that I had apparently made mistakes in attaching the labels. It was not until I had investigated matters very closely that I realised what had happened. Before the anthers burst, they were an inch or more in length and very narrow. On opening, however, they contract to less than half that length, and become twice as broad as they were at first. Dried specimens would therefore have to be very carefully examined in order to determine at what stage they were gathered and dried and whether the anthers had burst and contracted or were as long as they were when the flower first expanded. In any case, it is obvious that the relative length of the anthers and filaments is a very unreliable character on which to base specific differences.

It would be interesting to know if anyone can suggest any reason why some Tulips produce "droppers" or bulbs at a distance from the original bulb. Small seedlings of any kind of Tulip are very apt to do this, and some species never seem to grow out of the habit. T. Kaufmanniana is an inveterate offender, though some bulbs even of this species are content to produce an offset at the base of the mother bulb. The majority, however, produce one bulb where the bulb that has flowered was planted in the previous autumn and another at the end of a stolon-like growth, usually at a depth of several inches below the upper bulb. It might be argued *a priori* that the dropper went down until it came to more congenial soil, but here in this poor sand I find that the droppers go down through the layer of good soil and old manure, above which I endeavour to plant my Tulips, until they get into dry, hungry sand, which can hardly be to their liking. T. praecox has a curious habit of forming quite small offsets at some distance from the parent bulb, while the stolons sent out by T. saxatilis poke their noses into any hole in the rocky pocket in which I succeed in making this fine species flower annually, with the result that I rarely succeed in finding all the bulbs when I take them up. Sometimes in the case of this Tulip the stolons meet with a rocky surface, and then, because they cannot

go down or extend any further, they actually protrude above the surface. It was instances of this kind that showed me the end of the stolon thickening until it became a bulb without producing any roots. The nutriment is derived from the parent bulb and its leaves, and not from the soil in which the new bulb is formed, so that the roaming habit is not due to the attraction of a layer or pocket of rich food.

Another question to which it would be interesting to find the answer is, why do some species form no offsets, though the original bulbs are apparently quite vigorous and healthy, and grow on from year to year and flower annually? T. Greigii is a well known instance, and others are obtained an accurate idea of the various species that form the genus. The inquiry, though baffling, is undoubtedly attractive, and I shall be very grateful for any help from those who have special knowledge of the Tulips of any locality, or who possess specimens of undoubtedly wild Tulips, which are not easily obtainable. *W. R. Dykes, Charterhouse, Godalming.*

APPLE ST. CECILIA.

THE new dessert Apple St. Cecilia, illustrated in fig. 19, was raised from Cox's Orange Pippin crossed with an unknown variety. The seedling

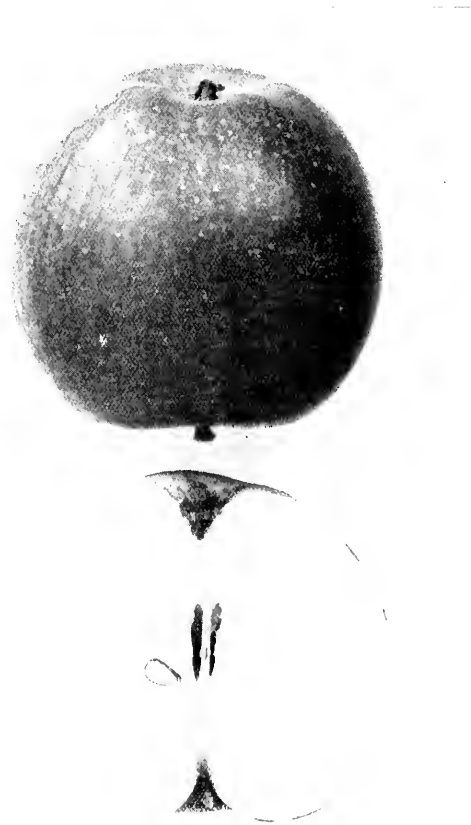

FIG. 19. NEW DESSERT APPLE ST. CECILIA
(R.H.S. Award of Merit, January 15, 1918.)

its relative T. Micheliana, and such species as ingens, Hoogiana and praestans. Fortunately, with the exception of Hoogiana, Micheliana and Eichleri, these wild species produce seeds fairly readily, though the ripening pods fall an easy prey to fungoid disease, and though the process of obtaining flowering bulbs from seeds is a lengthy one and takes at least five or six years.

It seems, then, as if a study of the habits of wild Tulips leads only to negative conclusions and to the conviction that little help can be obtained from dried herbarium specimens towards the determination of the limits of the distribution of each species; yet no real knowledge can be obtained of a genus of plants until we have

has much of the excellent quality of the Cox's Orange Pippin parent, and is a dessert Apple of first-rate quality, keeping longer than Cox's; fruits shown at the R.H.S. Exhibition on January 15, by Messrs. John Basham and Sons, were solid and juicy, without the least sign of shrivelling. To these qualities is added a strikingly handsome appearance, the fruits, though of small size, being as shapely as the best of Worcester Pearmain, and coloured a deep red all over, enhanced on the side next to the sun. The stalk is rather deeply set and somewhat slender. The illustration shows the fruits in their natural size. The variety will prove a valuable addition to late dessert Apples, and a successor to Cox's Orange Pippin.

FORESTRY.

THE HOME-GROWN TIMBER TRADE.

NEVER in the history of our country has the demand for home-grown timber been greater or prices higher than during the past twelve months. All kinds of timber have not, however, fared alike in that respect, the greatest demand being for Ash, Scots Pine and Spruce, and poles suitable for mining purposes. For the best cuts of Ash suitable for aeroplane construction the price has gone up by leaps and bounds, some logs being sold recently for 6s. per cubic foot where felled. In connection with this price it is well to remember that the high value is for picked trees, rough timber from the field and hedgerow being procurable in considerable quantity at from 2s. to 2s. 6d. per foot.

Scots Fir, which previous to the war could be bought in quantity at from 7d. to 10d. per foot, is now fetching 1s. 4d., and a plantation of very fine trees, averaging 40 feet each, was sold at fully one fourth higher than this price. Spruce is also in demand; it is scarcer than the Scots Fir, and has been sold of late at unheard-of prices, 1s. 4d. per foot being realised in the Metropolitan area for trees of 35 cube feet and upwards, where lying in the woodland. The pre-war price was about 7d. per foot.

Both Scots Fir and Spruce are particularly valuable for Government requirements, the timber being largely used in the making of ammunition cases and boxes of all kinds, as well as for trench work.

Other coniferous timbers, such as the Corsican and Weymouth Pine, Douglas and Common Silver Fir, have been sold of late at 10d. per foot, though in one instance at least 1s. 2d. was accepted for that of the Weymouth and Corsican Pines. Larch timber finds a ready market at prices which range from 1s. 2d. to 1s. 6d. per foot, but it is scarce when compared with the Scots or Spruce. It is the most useful of home grown coniferous woods, and is always in good demand. Elm has been much sought after of late, the price varying according to the district and quality from 1s. 2d. to fully 1s. 8d. per foot, but the price is curiously erratic even in the same county. For the best quality of Oak prices range high, 3s. 6d. per foot being paid for a large parcel of Surrey-grown trees. Welsh Oak, though not generally of large size, is of excellent quality and of a rich, deep colour, and the thinnings from a plantation in Denbighshire lately realised 2s. 6d. per foot in the woodland.

Beech has found a very remunerative market of late, and vast quantities of the timber have been felled in Buckinghamshire and Bedfordshire. That from the chalky Chiltern Hills is especially valuable, and sells at 1s. 4d. per foot in the wood. For Government purposes Beech timber is much in request. Birch and Alder suitable for clog soles and light furniture have advanced in price with the war, and about 10d. per foot may be considered an average value. Sycamore is in demand at all prices from 1s. 6d. to 2s. 6d. per foot, and some two hundred trees in Wales lately fetched 2s. 6d. per foot. For Poplar timber demand was never so great as at present nor prices higher, as much as 2s. 3d. per foot cube having been received for a number of trees some 50 miles from London. The usual selling price is, however, 1s. 4d. per foot where felled. Willow for artificial limbs and crutches, as well as other important purposes, is scarce, and remains but a short time on the market when offered for sale. Lime wood is being asked for at prices which average 1s. 4d. per foot, but it is scarce. Timber of the Lebanon Cedar, of which considerable quantities, chiefly wind-fallen, have of late been procurable, is being sold at a considerable advance in price over pre-war times. Some big logs, containing from 90 to 110 feet, were disposed

at recently at 1s. per foot. Owing to the official price being formerly 7d., and even so that "exchange" could not always find a market. Hornbeam is in demand, and from 7s. 6d. per stem 6 to 8 feet long has been realised; whole pieces 18 inches long by not less than 6 inches in diameter fetch 1s. each and upwards for skittles. Several of the less common and smaller growing timbers have found a ready market of late, particularly Holly, Elder, Acacia, Apple, Yew, and Evergreen Oak. For Holly, some of the sticks fully 15 inches in diameter, 2s. 6d. per cube foot was offered where they lay 3 miles from a railway station. Ten tons of Holly suitable for skewers was lately offered, and a truck load 5 inches to 12 inches diameter at 4s. 6d. per foot net. Wood of the Gean or Wild Cherry is selling well, and nearly a hundred trees in Kent, averaging 25 feet each, fetched 1s. 6d. where they were felled. Walnut in small quantities has been offered of late, and for some seasoned logs 4s. 6d. per foot was obtained. It is useful in many ways, and for gun and rifle stocks has no equal, as, apart from quality and beauty of graining, the timber does not rust metal with which it comes in contact. Of late, timber of the Sweet or Spanish Chestnut has been finding a better market than probably ever before, good, sound logs bringing 1s. 3d. per cubic foot—quite 6d. more than the average of three years ago.

Firewood is scarce and dear, a cord of Beech or Oak being, roughly speaking, one fourth higher in price than was the case before the war, while faggots for fire lighting have also advanced fully 25 per cent. Charcoal for heating the trenches in France and Flanders is much in demand at advanced prices, while timber suitable for charcoal for gunpowder making finds a ready and remunerative market.

The maximum prices for home grown timber fixed by the Controller of Timber Supplies will go far in regulating the output and value of native wood. *A. D. W.*

THE ROSARY.

ROSES OF CALIFORNIA AND NEVADA.

A RECENT issue of the *Bulletin of the Torrey Botanical Club* contains a paper on the Roses of California and Nevada, by Mr. P. A. Rydberg, who is monographing the American species for the *North American Flora*. Thirty four species are admitted for the area in question, one, however, being the Sweet Briar, the only member of the Canina, which is found as an escape from cultivation. The indigenous species are arranged in three sections: Cinnamomea with 29, Muntifoliae with one, and Gymnocarpae with three. No fewer than twelve species are described as new. An analytical key is given, with details of localities and collectors. Four of the species are in cultivation in Europe, namely, Rosa nutkana, R. californica, R. pisocarpa, and R. gymnocarpa.—*B. H. R.*

TREES AND SHRUBS.

ECCREMOCARPUS SCABER.

AMONG the many plants remarked on recently as having withstood the severe weather of last winter, I noticed no reference to Eccremocarpus scaber. This plant is growing here on the south east side of a dwelling among a medley of Jasmine growths, through which it has clambered up and over, looking very pretty with its scarlet and gold tubular flowers. The species did not survive the winter with me at Highgate, but it came through last winter here unharmed. No doubt the roots and top growths of the Jasmine afforded the plant protection, while the soil is light and on the dry side.—*C. T., Ampthill Park Gardens, Bedfordshire.*

THE GENUS COCOS.

WHEN writing some notes on "Garden Palms in the *Gardeners' Chronicle*" 33 years ago I stated, under "Cocos," that of the thirty or so species then known about twenty were in cultivation at Kew and elsewhere, and that they showed a much wider range of variation than any other genus of Palms. The differences in habit and leaf-structure between C. nucifera, C. plumosa and C. Weddelliana, for example, are very striking. With regard to C. nucifera, the Cocoa Nut, there is the remarkable fact of its being found wild in most tropical countries, and that its origin is obscure. De Candolle, in *Origin of Cultivated Plants*, inclines to the idea of an origin in the Indian Archipelago, whence it had been distributed to other countries ages ago by ocean currents. It is essentially a seaside tree, rarely, if ever, thriving away from the coast. All the other species are natives of tropical America. Dr. O. Beccari, in a revision of the genus Cocos, has reduced it to a single species, namely, C. nucifera, the others being regarded by him as members of other genera. A list of these, in accordance with Beccari's revision, is published in the Kew *Bulletin*, Nos. 9 and 10, 1917, the cultivated species being renamed as follows: C. Arechavaletana Arecastrum Romanzoffianum; C. australis Butia capitata; C. Bonnetii Butia Bonnetii; C. campestris Syagrus campestris; C. capitata Butia capitata; C. comosa Syagrus comosa; C. coronata Syagrus coronata; C. Datil Arecastrum Romanzoffianum; C. elegantissima Syagrus Weddelliana; C. eriospatha Butia eriospatha; C. flexuosa Arecastrum Romanzoffianum; C. insignis Syagrus insignis; C. longifolia Attalea excelsa; C. mammillaris Butia Yatay; C. Normanbyi—Normanbya Muelleri; C. nucifera the Cocoa Nut; C. pernambucana Syagrus botryophora; C. plumosa Arecastrum Romanzoffianum; C. Procopiana Syagrus macrocarpa; C. Romanzoffiana Arecastrum Romanzoffianum; C. schizophylla Butia Bonnetii; C. Weddelliana Syagrus Weddelliana; C. Yatay Butia Yatay.

The following do not appear to have been dealt with in this revision: C. amara, C. Blumenavii, C. botryophora, C. Butuei, C. Gaertneri, C. Mikaniana, C. Marie Rose, C. Sancona, C. Yurumaguas.

It will be seen that plumosa, one of our most popular Palms, has the misfortune to be re-christened with a name that has little chance of ever being taken up by gardeners, also that flexuosa, Datil and Arechavaletana are identical with it. The popular little Cocos Weddelliana is now a Syagrus, as also is another similar little Brazilian Palm formerly called Glaziova insignis, now to be known as Syagrus insignis. Butia is not a happy generic title, as it too closely resembles Butea, a genus of Leguminosae, of which B. frondosa is a showy Indian tree with valuable economic properties. Anyhow, it is satisfactory to have the Cocoa Nut set out as a distinct monotypic genus, seeing that in its way it is as singular as the Double Cocoa Nut, Lodoicea sechellarum, and that it is by far the most valuable of all tropical trees.—*W. W.*

FIG. 20.—A POT SPECIMEN OF THE COCOANUT PALM, COCOS NUCIFERA.

WALL FRUIT TREES.

DESIGN, PLANTING, TRAINING.

AN enormous number of wall trained trees are too large, massive, and irregular in form to bear evenly and regularly. The average fruit tree of any shape or size carries enough wood to make a dozen. The form and substance of a tree determines its capacity for bearing. Large and shapely trees, whilst attractive to the eye, are too long in coming into profit, are the most difficult to deal with and are never entirely under control. Soil, climate, situation, space available, type of tree, domestic needs, and personal capacity or inclination, have to be considered, but the prime necessity is a tree that will mature early and bear regularly.

If we allow that the world moves ever so slowly, and that waste is inexcusable, the big and complicated forms of espalier, fan shaped, and less definite wall trained trees should be regarded as obsolete; at least, they are not desirable for Pears or Apples, and in passing one may say that the Apple has not yet come to share the wall space it merits.

Single Cordons are the simplest, surest, and most profitable of all known or conceivable forms of fruit trees for walls, and should predominate everywhere. The more one understands the nature of fruiting trees, it will be apparent that but little wood is wanted, and with fewer branches the pruning grows less, simply because little or no excessive growth is allowed to occur. If a tree is planted well above the surrounding land, as a maiden, or by pruning is made light in structure, given an inclination of about 45° or a few points less for the first two or three years—and no more than finger-pinched till the desired height and number of spurs are obtained, it will not be able to develop an over-robust root system, nor to make a trunk or lateral growth too coarse or imperfect to yield good fruit freely.

Wall trees—and all others if they are to be under control—should have shallow and light root systems, and any risk of drought should be met by mulching. The mulch is of especial value, as where a soil is well drained and freely aerated the mulch promotes and preserves the finest type of fibrous roots, thus promoting and supporting fruit. It may be said with emphasis that no Cordon Pear or Apple tree needs more than a barrowful of soil, provided such soil is composed of suitable materials placed on a cool but drained base, and receives a sweet, nourishing mulch during times of much heat and cold.

We do not improve much in forming and managing trees, and though there are good books on the subject, the vast majority of men cut blindly and train and trim without reason.

A Pear rod an inch or so in diameter at its base, and tapering like a whipstock, will support sufficiently vigorous fruit spurs over thirty to fifty years. A similar rod of the average Apple will not prove profitable over more than half that length of time, or, say, fifteen to twenty five years. But in either case it is long enough, for we should not strive to make true the jingle and absurdity of planting Pears for our heirs—or even Apples.

The stock—as dwarfing or free is a pronounced factor in the wood growth of Pears and Apples, but it is necessary to limit the soil supply and the root range that the head growth may be limited, light, and always well ripened.

A Cordon tree should be widest at its base, the lower spurs complex or multiple, fairly stout, and spreading 6 to 9 inches on either side of the stem. It is always necessary to have heavily built spurs at the lowest parts, or the super-growth will overwhelm and exhaust them. The spurs should be shorter, lighter, and further apart as they ascend, then the sap will be evenly apportioned, and every part of the tree bear fruits of even size and quality.

Cordons will form trees from 10 to 12 feet high if planted 3 to 4 feet apart. It is not wise to plant them closer, as where very close planting occurs the roots interfere with each other, and there is insufficient space, light, air, and sunheat for leaf development.

The borders in which wall fruit trees are planted should always be raised several inches above the ground level, and cut off by such means, and by good drains, from any soakage of water from adjacent land.

Neither leaf mould nor strong dung should be incorporated with soil intended for fruit trees, but lime, mortar-rubble, wood ashes, sand, or any clean, gritty matter, with a spadeful or two of fibrous soil about the roots at planting, are valuable additions.

If the soil of a border or extended space to carry Cordons is heavy, uneven in form and quality, or infested with weeds, the whole mass should be thrown out to leave an open trench from early winter till February or March. This treatment will clean and improve the soil, show what draining, if any, is needed, and secure a true foundation at a uniform depth for all the materials required by the roots.

Drains should never be placed under the planting lines, and in the case of wall trees they should run not less than 3 feet from the walls. Excepting unusually heavy soils, or where much water drains towards the wall, a border may be so raised and composed as to obviate draining.

After forming a border planting should be deferred for two or three weeks to allow the soil to settle to its former level. Unless trees can be set out in the early autumn it is better to nurse and protect them through the winter and plant in March or early in April. A tree is aided by cutting or preparing its roots in autumn, as then a callus is formed by the spring. A tree does best planted when it may move in the roots but not in the head, for root growth should always precede head growth in a newly-planted tree.

No tree was ever planted too high. The best examples of high planting are the millions of fine trees on the raised banks of British hedge rows.

It is true that Pears on Quince stocks should be planted to cover the union of stock and scion, but it is sometimes safer to apply a thick bandage and to keep it on indefinitely.

Cordon trees should be inclined away from the strongest light, otherwise they will grow thick at the top and bare at the bottom. The angle or slope of a tree should be according to its native vigour. The stronger the tree the more it should be trained from the upright line. Therefore, if several sorts of Pear or Apple are chosen for Cordons, their habits and needs should be known, for it neither looks well nor pays to have trees running at different angles on one stretch of wall.

Trees should not be planted within a foot or 15 inches of walls. The jamming of trees against walls is a common cause of disease, irregular growth, and unprofitable results. For Cordons a stake or smooth rod should be pressed in a foot or two to one side of the planting site, and at planting the tree should be leaned over and tied so that its roots are kept steady and the head prevented from chafing by the wall. A thick bandage should be placed round the stem and the stake to prevent rubbing and cutting of the bark. The stake or pole will serve for the first two or three years, according to the length of the Cordon at planting, after which time fairly long pegs should be driven into the wall at intervals of 3 feet or so and the tree drawn over and inwards and secured, so that it slants towards the top of the wall. There should be no forcing or bending or close nailing in of the main stem, nor is there any advantage in nailing any other growth to the wall. *A. C.*

The Week's Work.

THE KITCHEN GARDEN.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

TOMATOS.—In raising seedling Tomatos aim at securing dwarf, healthy plants that will produce their first cluster of fruit 12 or 15 inches from the soil in the pots. If the plants come up thickly in the seed-pan thin them early, and shift them singly into small pots when they are of a suitable size, and continue to grow them in the same house. The soil for potting should be light in texture and warmed to the temperature of the house. Grow the plants on shelves near the roof-glass, and water them carefully with warm water. Pot the plants before they become pot-bound, for neglect in this matter would cause them to grow spindly, especially if the first pots are of small size.

FORCING PITS.—Where the fermenting material was prepared as advised in a previous calendar it will now be ready for making into hot-beds for the forcing of early Potatos. Pack the material firmly together and cover it with about 1 foot deep of rich, light soil. As soon as this is warmed through, plant the Potatos previously sprouted in boxes, making the rows 15 inches apart and putting the sets 10 inches apart in the rows.

FORCING.—Continue to insert fresh batches of Asparagus, Rhubarb, and Seakale in heat, selecting strong roots or crowns. Let the clumps be well moistened with tepid water and weak liquid manure to hasten the forcing. If plants of Seakale in the open have not been covered, these should be attended to. First clear the ground of weeds and then lightly fork the surface. Cover the crowns with a heap of fine coal ashes. Place Seakale pots over a portion of the plants, and surround them with sweet fermenting material composed of leaves, or leaves mixed with stable litter, sufficient to create a gentle warmth, and to exclude the cold air. The remainder of the bed should have the crowns well covered with ashes, placing a ridge of soil over the ashes, which will ensure a much later and equally satisfactory crop.

SHALLOTS.—The bulbs should be planted at the first opportunity in an open situation on well-prepared ground. Allow a space of 12 inches between the rows, and not less than 6 inches between the bulbs, giving the larger growing varieties a little more room than the smaller sorts. Bury the bulbs rather more than half their depth. The ordinary English variety is one of the best for general use; the large red-skinned varieties give larger bulbs.

PEA AND BEAN STICKS.—Get together a supply of Pea sticks, sharpen the points and tie them in bundles of the same size. Stakes for Runner Beans should also be got ready in the same manner. Doing work of this kind now will ease matters when the busy season arrives.

ARREARS OF WORK.—The work of digging and trenching has been delayed by the recent severe weather, and with a depleted staff this will mean disorganisation in the spring, unless special efforts are made to overtake arrears. Pay attention to early borders first, adding leaf mould and any other light compost available, as there is a scarcity of animal manure. To secure good crops, all soil should be moved deeply more or less, according to circumstances.

THE HARDY FRUIT GARDEN.

By JAS. HUDSON, Head Gardener at Gunnersbury House, Acton, W.

STRAWBERRIES.—Where new Strawberry beds were made last season it will be well to take the first opportunity, when the soil is fairly dry, of treading around the plants to make them firm after the frosts. Having done this let the ground be lightly hoed. Older plantations should have the soil lightly forked up around each crown and between the rows, or if this were done in the late autumn the ground should be merely hoed. In the case of plants growing on heavy soils, or those in old beds, apply a light dressing of well-rotted manure, spreading it on the surface and allowing it to remain there for the present.

AUTUMN (OR PERPETUAL-FRUITING) STRAWBERRIES.—I prefer to plant autumn-fruiting Strawberries early in the spring rather than in late summer. When new beds are required—and it is better to form these in alternate years the site should now be chosen, in a warm sunny situation. Let the ground be trenched two spits deep, provided deep digging does not interfere with the roots of fruit trees. Use farmyard manure if obtainable, and ground lime; place the manure in the second spit. Select the best possible runners from the old beds, lifting the roots with a ball of soil. Set three plants in a group at about 6 inches apart, allowing a space of 2 feet between each group, and the same distance between the rows. Plant when the ground is in good working condition, and make the soil firm afterwards. My reason for advocating spring planting is to ensure a good growth before the autumn flower trusses appear. These Strawberries have a tendency to develop a plentiful supply of late flower trusses, and do not, in consequence, make such good plants when planted late. The following is a list of proved varieties: St. Antoine de Padoue, St. Fiacre, Continuity, Merveille de France and La Perle.

WINTER WASHES.—Advantage should be taken of fine, still days to apply a winter wash to fruit trees. I do not advise the use of concentrated alkali washes too frequently, for it has a tendency to harden the bark of Apple trees. If used two seasons in succession it should be missed on the third, and a mixed winter wash used instead. Where, during the past spring, there were attacks of Caterpillars, I advise that the mixed wash be used in good time, the spraying to be repeated, if necessary, later. Be careful not to exceed the strength recommended by the makers; certain specifics can be used at an increased strength in the dormant season. It is well for the operator to wear indiarubber gloves and a mackintosh as a safeguard against injury to the hands or to the clothes. Where American Blight is a source of trouble strong measures must be resorted to, and where the trees can be effectually treated by hand I advise the use of a

strong mixture of paraffin and soap applied with a stiff paint brush. The pest is often present in the soil on the roots of the trees, and it may be attacked there with a sterilizer, of which there are several on the market. Lime sulphur spray is the most effectual specific in many instances. Trees of Cox's Orange Pippin Apple in these gardens are sometimes affected with mildew, and lime sulphur is an excellent remedy for mildew. Use this wash first when growth is dormant, and again later if necessary. It will also destroy red spider; indeed, lime sulphur is a most valuable preparation generally for the fruit grower.

FRUITS UNDER GLASS.

By W. J. GUISE, Gardener to Mrs. DEMPSTER, Keele Hall, Newcastle, Staffordshire.

CHERRIES.—Cherry trees growing in borders may be allowed to start into growth with little or no fire-heat. A little artificial warmth may be used at night during the flowering period, but only sufficient to maintain a dry atmosphere. By these means a succession of fruits to those from pot trees may be maintained. The house should be cleansed thoroughly, and the trees washed with a suitable insecticide. A house is not usually devoted entirely to Cherries. Cordon trees do exceedingly well trained up the front of mid-season and late Peach houses, where very little fire heat is required. The following are suitable varieties for the purpose: Werder's Early Black, Governor Wood, Early Rivers, Elton, Frogmore, Early Bigarreau, Bigarreau de Schrecken and Downton. Standard fan trained trees do equally well on the back walls of fruit houses, if cool conditions can be maintained. All varieties may be grown in the orchard house, and in these unheated structures a succession may be obtained by planting Florence Bigarreau, Napoleon, Géant d'Hedelfingen, and Late Duke. Autumn planting is always preferable. A moderately light, rich loam should form the bulk of the compost used for the border, with a suitable proportion of mortar rubble, burnt garden refuse, and decayed leaf mould. In restricted borders the roots are well under the control of the cultivator.

EARLY VINERY.—When the shoots of early vines are sufficiently advanced for training they should be brought down to the wires by degrees, according to their stiffness; if bent much at first they will snap at the base. As the shoots advance sufficiently to be thinned, retain the strongest or best situated, with the most promising bunch. If the spurs are regular, one shoot will be sufficient; the others should be removed. An extra shoot on a spur is not injurious to the vine, but space is necessary for the fruit to develop. Daily attention must be given to stopping the shoots, usually two leaves beyond the bunches. A night temperature of 60° should be maintained, but a rise of 10° or 15° will do no harm. Regulate the amount of damping according to the state of the weather, only lightly sprinkling the floors and bare spaces on wet, dull days. Admit air every day more or less, but do not permit cold draughts to reach the vines. Coarse tiffany stretched over the ventilators will prevent cold, gusty winds from reaching the tender foliage.

STRAWBERRIES.—Successional batches of pot Strawberries may be placed on shelves in Peach houses that have just been started. In our damp, cold district, I find it much the best to winter the plants in cold frames. Before the plants are brought into the glasshouse the pots are placed on their sides and the foliage thoroughly syringed with an insecticide. A little of the surface soil is removed and replaced with a rich compost. Great care must be exercised in watering, as very little moisture is required until the roots are active. Reserve plants in cold frames must not be allowed to suffer for want of water.

POT FRUITS.—Provided there is sufficient space, a few early varieties of Plum and Cherry trees in pots may be placed in Peach houses that have just been started. Syringe the trees with an insecticide or fumigate them in the house. The roots will not need much water until top growth commences. Syringe the trees once or twice daily, and do not let the temperature rise too high or the atmosphere become excessively close.

PLANTS UNDER GLASS.

By F. HARRISS, Gardener to Lady WANTAGE, Lockinge Park, Berkshire.

CLERODENDRON FALLAX.—If cuttings of Clerodendron fallax are available they may be inserted singly in small pots filled with a light, sandy compost. Let them be sprayed two or three times daily in bright weather and shade them from sunshine until roots are formed. This plant may also be raised now from seeds sown singly in 3-inch pots and plunged in a hot-bed. Cover the pots with a sheet of glass, and shade them till the plants are through the soil. Red spider often attacks the leaves, and may be kept in check by syringing the foliage regularly with rain water.

CALADIUM.—Batches of Caladiums may be placed in their growing quarters as required. In large specimens are desired several bulbs may be placed in each pot, those of 5 or 6 inches in diameter being suitable. Later the plants will need more root-room, and bigger pots will be required. A fairly rich compost should be employed, as the Caladium is a gross feeder when in active growth. When potted, place the plants in a house having a moderately warm temperature and water them with extra care until they are well rooted. When the plants are growing freely, close the house early in the afternoons after spraying them with rain-water.

FREESIA.—The main batch of Freesias should be kept growing in cool conditions. If necessary, a few may be hastened into flower in a warmer house. Let the roots have plenty of stimulant as the flower stems will grow weak. See that the stems are neatly and sufficiently supported with stakes.

LACHENALIA.—This useful greenhouse plant will soon be throwing up flowers, but unless bulbs are required early the plants must not be forced unduly. A shelf near the roof-glass in the greenhouse is an ideal position for Lachenalia until they flower. When the pots are full of roots the latter should be given diluted liquid manure and soot water alternately.

THE ORCHID HOUSES.

By J. COLLIER, Gardener to Sir JEREMIAH COLMAN, Bart., Gatton Park, Reigate.

SOPHRONITIS GRANDIFLORA is in bloom; the flowers are produced from the partly developed pseudo-bulbs, and should be kept sufficiently moist at the roots to keep the Sphagnum moss green and healthy. Care must be taken that water does not lodge in the centre of the young growths, as this might cause the young pseudo-bulbs to decay. Plants requiring fresh rooting materials should be attended to when roots begin to develop from the new shoots. This Orchid is best grown in well-drained, shallow pans, using a very thin layer of Osmunda fibre and Sphagnum moss for a rooting medium. Suspend the pans from the roof rafters, in a cool house.

PLATYCLINIS GLUMACEA.—This useful species has commenced pushing up its new growths, and may be repotted at any time between the fading of the flowers and the ripening of the young pseudo-bulbs. Well-drained shallow pans, that may be suspended from the roof, form the best receptacles. The plants need plenty of water at the roots all through the growing season, and should be grown in an intermediate temperature. The rooting medium may consist of two-thirds A 1 or Osmunda-fibre, one-third good fibrous loam with the small particles removed, adding some chopped Sphagnum-moss, and crushed crocks to render the soil porous.

MEXICAN LAELIAS.—Plants of Laelia albida, L. autumnalis, L. Gouldiana, L. furfuracea, and those of the Laelia anceps type, should be afforded very little water at the roots after they have finished flowering, it being only necessary to keep the pseudo-bulbs from shrivelling. If fresh rooting material is necessary it should be afforded as soon as roots develop from the bases of the new pseudo-bulbs. Well-established specimens growing in receptacles sufficiently large for their needs should not be disturbed unnecessarily, but where the old compost has become loose and decayed it should be carefully removed with a pointed stick, and all the small particles washed from among the drainage, afterwards adding fresh rooting material. Plants that have overgrown their receptacles may, if there are numerous pseudo-bulbs behind the leading growth, be divided and made again into shapely specimens. Whether the pieces are potted up separately, or several together, it is not necessary to retain more than two or three pseudo-bulbs behind each leading growth. Shallow pans or Teak wood baskets may be employed for these Mexican Orchids, and they should be of sufficient size for at least two seasons' growth. In re-potting, keep the rhizome of the plant just on a level with the top of the receptacle, which should be about half filled with clean crocks for drainage. A suitable compost consists of equal parts of coarse Osmunda and A1 fibre, with all the dust removed. In re-potting, press the compost firmly, especially along the rhizome of the plants, and insert a few pieces of crock in the compost to assist the free passage of water. Grow the plants in a house having an intermediate temperature, standing them in a light position near the roof glass.

THE FLOWER GARDEN.

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

PROPAGATING. Cuttings of by far the greater number of flowering plants used in garden decoration root best in warmth in a very moist atmosphere at this season, and no material is better adapted for rapid and certain root production than moderately coarse sand, and sea sand is suitable. Cuttings should all be in a growing state when taken, and, in opposition to the generally received opinion, the cuttings of nearly all kinds of flowers produce roots without cutting the slips across below a leaf node. All that is needed is to cut them off the stock plants above a leaf, when they will be in a proper condition to insert in the rooting material. It is very important that the cuttings should not flag, and when many are taken at a time they should be thrown into water till ready for insertion. The sand bed should be soaked with tepid water a few hours previously to inserting the cuttings, thus ensuring that the sand is neither too wet nor too dry. There are two rapid methods of insertion. One consists in making a depression of the correct depth and width with a narrow sheet of glass by pressing it into the sand. The cuttings are then rapidly arranged in the slit, and they may be touching each other if need be where space is limited. After the slit is filled the sand is pressed against the cuttings and another depression made parallel to the first, and so on, till all are inserted. The other method is more suitable for large slips. Each one is grasped between the finger and thumb, the index finger lying along the cutting, and with it is pressed into the sand. It is almost as rapid a proceeding as the first named. Where cuttings are rooted in boxes a very sandy compost should be used, and I find that girls do the work more rapidly and effectively by making holes for the cuttings across the lines, then dropping a cutting into each hole and pressing a section down. Either glass or paper should be placed over the cuttings till the latter are rooted; sometimes both are necessary when the sun is strong. There are a few plants which do not succeed when treated as above; Ice plants for instance, and especially the variegated Ice plant. The cuttings of this plant need no "making" after removal from the plants, and are inserted in boxes like the others, but they should not be watered till roots have formed. These need no bottom heat. Pelargoniums form another class which demands special treatment. These I always cut under the leaf, though they root sometimes away from one, but the usual method is the safest. Varieties vary considerably in the way roots are produced; of some a percentage is always lost, whilst of others, as Paul Crampel and the Ivy leaf varieties, every one roots. All root with least loss when inserted singly in small pots filled with a sandy compost. Water with extra care until calluses have formed. A high temperature is to be preferred, and for the first few days, should the sun be powerful enough to affect the leaves, a slight shading, such as newspapers afford, should be spread over them.

EDITORIAL NOTICE.

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

Special Notice to Correspondents. — *The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.*

APPOINTMENTS FOR FEBRUARY.

MONDAY, FEBRUARY 4—
National Chrysanthemum Soc. Ann. Meet. at Carr's Restaurant, Strand, 6 p.m.

TUESDAY, FEBRUARY 5—
Scottish Hort. Assoc. meet.

THURSDAY, FEBRUARY 7—
Manchester and North of England Orchid Soc. meet.

FRIDAY, FEBRUARY 8 —
Royal Gardeners' Orphan Fund Annual Meeting and Election of Candidates, at Simpson's, Strand, 3 p.m.

TUESDAY, FEBRUARY 12—
Roy. Hort. Soc.'s Comm. meet.

THURSDAY, FEBRUARY 21—
Manchester and North of England Orchid Soc. meet.

TUESDAY, FEBRUARY 26—
Roy. Hort. Soc.'s Comm. meet.

WEDNESDAY, FEBRUARY 27
Elgin Hort. Soc. meet.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 39.5.

ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, *Thursday*, January 31 10 a.m., Bar. 30.2, temp. 41.5°. Weather—Foggy.

Mildew Resistant Hops.

The Hop growers of England have two pests with which to contend: "mould" or "red mould," caused by the mildew fungus Sphaerotheca Humuli; and the blight caused by the insect Phorodon Humuli. The latter, if treated with a suitable insecticide, does not cause the grower very great anxiety, but the mould, if it makes its appearance in dull, damp seasons, may, in spite of assidnous sulphuring, cause very serious losses. Mr. Salmon, whose most recent investigations* we now describe, estimates that the ravages of red mould in 1916 cost the growers many thousands of pounds, for many acres had to be left unpicked and the less severely affected Hops suffered a serious reduction in price. The species of fungus which attacks the Hop, Humulus Lupulus, also attacks the other genera of the Hop family; but it has been shown that the fungus (Sphaerotheca Humuli) is, like other species of mildew, a specialiser: it develops biologic forms which concentrate their attention each on a separate host, and, as a defect of this quality of specialisation, become less apt to attack any other species of plant.

This being so, it should not perhaps prove impossible to discover a variety of Hop which the highly specialised mildew might be unfitted to attack; in short, to discover mould-resistant Hops. The possibility of the existence of such resistant forms was converted to a certainty by observations made by Mr. Salmon in 1914. In that year seedling Hops were raised and grown under glass in large numbers for experimental purposes which required them to be cultivated under conditions favourable to the development of mildew. So favourable indeed were the conditions that, generally speaking, it only required a Hop plant to be brought into the house for it to be attacked. Nevertheless, among the seedlings two plants failed to contract the disease. In spite of their surroundings, and in spite of efforts made to infect them, these two plants remained immune. They were seedlings of the "wild Hop," obtained from Italy. Other seedlings of the same origin, some 70 in number, proved susceptible.

In 1916 a precisely similar observation was made—seven seedlings of the "wild Hop," out of a total of about 160, proved resistant to mildew.

Another resister also appeared in the form of a yellow-leaved Humulus Lupulus obtained from Messrs. Bide and Sons, of Farnham. This golden Hop resisted all efforts to induce it to take mildew.

The immune seedlings of 1914 were planted out and grown on at Wye. One proved to be a male, and the other a female. In the bad mildew year of 1916 they retained their immunity throughout the summer and early autumn, but mildew appeared in October on both seedlings.

From these facts it is reasonable to conclude that varieties of Hop may be found which possess complete immunity with respect to Hop mildew, and from analogy with what has been done in the way of breeding forms of plants resistant to other diseases (rust of Wheat, wilt of Cotton, etc.), it is probable that mould-resistant races of Hop may yet be raised, to the comfort of the Kentish men and the profit of British agriculture.

In connection with the subject of immunity, Mr. Salmon draws attention to the following interesting fact concerning the Virginia Creeper (Vitis hederacea). This plant when growing in the United States is commonly attacked by a mildew (Uncinula necator), but no record is known to Mr. Salmon of this fungus attacking Virginia Creepers growing in this country. He suggests that this is not a case of immunity, but that freedom from attack here is due to the absence of the biologic form of the fungus which makes a speciality of, and alone possesses the secrets of success in, attacking the Virginia Creeper. In support of this view, Mr. Salmon points out that a precisely similar state of affairs obtains with respect to the Hop in Japan. There the Hop is never attacked by mould, but specimens of Japanese Hops raised in this country prove to be completely susceptible.

Mr. Salmon does well to warn us that trouble may be in store if we once allow of the introduction into this country of American-grown Virginia Creepers. They will of a certainty bring the mildew with them, and once arrived here it may make itself painfully at home.

* *On Forms of the Hop Resistant to Mildew*, by E. S. Salmon, S.E. Agric. College, Wye.

ROYAL GARDENERS' ORPHAN FUND.—The annual general meeting of the Royal Gardeners' Orphan Fund will be held at Simpson's Restaurant, 100, Strand, London, W.C., on Friday, the 8th inst., for the purpose of receiving the report of the committee and statement of accounts for the past year; to elect officers for the ensuing year; to elect by resolution fourteen children to the benefits of the Fund; and to transact such other business as may arise. The chair will be taken at three p.m.

DENMARK PROHIBITS TRADE IN SEEDS.—According to the *Board of Trade Journal* H.M. Minister at Copenhagen reports that the Danish Ministry of the Interior has issued a notice forbidding, pending the issue of further regulations, trade in all kinds of seeds, including field seeds, root seeds, and garden seeds, whether of Danish or foreign origin, both of the 1917 and of previous harvests. Moreover, all deliveries of such seeds, notwithstanding running contracts, are forbidden until further notice. Bird-seed is, however, excepted.

LECTURE ON POTATO-GROWING.—The President and Council of the Royal Horticultural Society have arranged for a lecture to be delivered at the Mansion House, at 3 p.m., on Wednesday, February 13. The subject of the lecture is "Potato Growing—Spring Work in Seed and Planting," and the lecturer is Mr. W. CUTHBERTSON, J.P., V.M.H. Admission will be by ticket only, which can be obtained from the Secretary of the Royal Horticultural Society, Vincent Square, Westminster, on written application accompanied by a stamped addressed envelope.

THE NATIONAL CHRYSANTHEMUM SOCIETY.—The meetings of the Executive Committee of the National Chrysanthemum Society will be held on February 18, September 23, October 21, November 18, and December 2, at Carr's restaurant, Strand. The Floral Committee will meet at Essex Hall, Essex Street, Strand, at 3 p.m., on September 23, October 21, and November 18, and at the London Scottish Drill Hall, Buckingham Gate, S.W. 1, at 11 a.m., on Tuesday, November 5, when Chrysanthemums will be exhibited in conjunction with the R.H.S. meeting.

EDWARD MAWLEY MEMORIAL.—There being a general desire amongst members of the National Rose Society that something should be done to mark the esteem and affection with which the name of EDWARD MAWLEY will always be remembered by lovers of the Rose, the Council propose that the memorial should take the following forms: 1. A stained-glass window to be erected in St. Michael's Church, Berkhamsted. 2. A medal of an approved design, to be entitled "The Edward Mawley Memorial Medal." Two of these medals will be awarded every year at the Summer Show of the Society, one for amateurs, and one for nurserymen, to the most worthy exhibits respectively in each of these sections. The Council have appointed a Special Committee to carry these proposals into effect, and the Committee now appeals for donations to the fund which has been established for the purpose. Subscriptions are limited to £1 1s., but smaller amounts may be contributed, as it is desired to include the largest possible number of names in the list of subscribers. Subscriptions should be sent to the Hon. Treasurer, Mr. PRESTON-HILLARY, 25, Victoria Street, London.

LECTURES ON FOOD PRODUCTION.—Mr. F. J. CHITTENDEN, head of the Royal Horticultural Society's School of Horticulture at Wisley, is to deliver a course of six weekly lectures on "Small Gardens and Allotments for Purposes of Food Production," at Bishopsgate Institute, E.C., on Wednesdays, at 1.15 o'clock, commencing February 20. The subjects of the individual lectures will be as follows: Feb. 20. "The Soil a Source of Supplies: Digging and Trenching It"; Feb.

27, "How to Ensure Water and Air Supplies to Crops"; March 6, "The Mineral Supply and its Effect on Crops"; March 13, "The Nitrogen Supply and its Effect on Crops"; March 20, "Seed Sowing"; March 27, "Transplanting and Spacing." Bishopsgate Institute is in Bishopsgate, three minutes' walk from Liverpool Street Station, and admission to the lectures is free.

PYRACANTHA GIBBSII (see fig. 21).—This is a new species introduced from China by Mr. E. H. WILSON. The Hon. VICARY GIBBS exhibited a specimen at the Royal Horticultural Society's meeting on January 5, 1915, under the name Pyracantha crenulata, and it received an Award of Merit from the Floral Committee. In our description of the plant in the issue of January 9 of the same year, p. 23, we stated that a form of P. crenulata had been in cultivation in this country for some considerable time. WILSON'S plant has since been found to be a distinct species, and has been named P. Gibbsii, in honour of Mr. VICARY GIBBS, in whose gardens at Aldenham the plant illustrated in fig. 21 was photographed. Mr. E. BECKETT describes the species as one of the finest of evergreen, berried plants in the very extensive collection at Aldenham. The fruits are about the size of haws, but rounder, and of a dull red colour. He states that the growth is strong, and that the plant forms a fine bush in a short time. It is perfectly hardy, and succeeds well in almost any situation. Pyracantha coccinea is a popular wall plant, fruiting more freely when grown in such a position than in the open. Mr. BECKETT is of opinion that P. Gibbsii will be equally satisfactory for such a purpose.

A NEW SENECIO.—Senecio Fernaldii is a diminutive new Groundsel, native of Newfoundland, discovered by Dr. GREENMAN. Like our common Groundsel, it belongs to the section with normally discoid heads, and occasionally develops a ray. The flowers are orange-scarlet; the new species can only be regarded as of botanical interest, and is not likely to possess any garden value.

HOME CORRESPONDENCE.

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

STORING APPLES.—I was much interested in reading Mr. BECKETT'S system of storing Apples, p. 8, and I endorse his remarks, unorthodox though they may be. During my probationary career in a garden in Wiltshire, the Apple crop was an abundant one, and storage space limited. The gardener under whom I then served used to store the fruits in heaps in barrels and in disused stables, well protecting them from frost. They had very little ventilation, yet the fruits kept plump and sound. Since then as occasion has arisen, I have never hesitated to store Apples several layers deep, and have always found that they keep much better and longer than when spread out thinly. Last season we gathered the best crop of Apples ever harvested here, and the fruits were stored thickly, with the result they are keeping better than we have had them before. Are not mistakes often made by gathering the fruits before they are mature? The fruits from trees growing in heavy, undrained clays should perhaps hang longer than is necessary on warmer, flinty, and better drained soils, where they mature earlier. *E. F. Hazelton, North Mymms Park Gardens, Hatfield, Hertfordshire.*

—Mr. Hudson's methods are perfectly correct when they can be afforded. His is the ideal method. How often, however, can ideal methods be practicable under average conditions? The economic side of fruit, flower, and vegetable production is, as a rule, of no concern to the professional gardener. He has been encouraged in the past to produce the best of everything, regardless of cost, and it is under these circumstances that Mr. Hudson and most of his colleagues write. Mr. Beckett's method of keeping fruit is not the ideal one under luxurious conditions, but it is an excellent and eminently practical one under economic limitations. If these respective honoured and skilled growers had gone to the trouble of pointing out the conducting factors of their advice, *Pomona* would not have been able justly to lay claim to the nom de plume in respect to this matter. I have kept Apples and Pears in the South as well as in the North of England under the respective systems of Messrs. Hudson and Beckett. During the past year or two I have experimented with the effect of covering Apples laid out singly on shelves with ordinary butcher-blue paper. Experimenting with 24 varieties (18 kitchen and six dessert), an average loss in weight of 7.8 per cent. over a period of three months was observed in the uncovered samples: a loss which was reduced by one-half in the case of the covered fruits. In respect to this loss of weight over a prolonged period, varieties of equally reputable keeping qualities showed considerable discrepancies. Lane's Prince Albert, for instance, lost weight at double the rate of Bramley's Seedling, although both varieties looked apparently as sound as each other at the end of the test (mid-January). The great fundamentals of good fruit keeping are, in my opinion, (a) thorough maturation of fruit on the tree, (b) careful handling, (c) a cool temperature in the store, (d) an equable atmosphere. Apples will then keep as long as their inherent keeping qualities allow. *C. W. Mayhew, Morpeth.*

FIG. 21.—PYRACANTHA GIBBSII AT ALDENHAM.

SOCIETIES.

GARDENERS' ROYAL BENEVOLENT INSTITUTION.

ANNUAL MEETING AND ELECTION OF PENSIONERS.

JANUARY 24.—The 78th annual meeting of the Gardeners' Royal Benevolent Institution took place at Simpson's Restaurant, 101, Strand, London, on Thursday, the 24th ult. Sir HARRY VERTCH presided, and there was a moderate attendance. The secretary, Mr. G. J. INGRAM, read the notice convening the meeting, and then proceeded to read the report of the executive committee, of which the following are extracts:

EXTRACTS FROM THE REPORT OF EXECUTIVE COMMITTEE.

The Committee deeply regrets that the 78th Annual Report is not so favourable as could be wished from a financial point of view; but the greatest claims on the public for war charities have seriously told upon the income of all old-established institutions, and on none more than the Gardeners' Royal Benevolent Institution.

The enforced abandonment of the Festival Dinner, with its Annual Appeal, for the past three years has naturally resulted in a much diminished income, but, notwithstanding, the Committee are thankful to be in a position to report that, with their limited Reserve Fund, and without at present encroaching upon the Capital Funds, they have been able to maintain their work as heretofore, and to continue the benefits to the annuitants, as well as to give a much needed and from

the Good Samaritan Fund to those applicants who have applied for its help.

At the last election 18 candidates were added to the funds, making 262 in all. The Committee now recommend an election of 15 this day from an approved list of 58 applicants. They feel they are not justified in doing more than this, thus filling the vacancies caused by deaths during the past year. The 43 unsuccessful candidates will be left to rely solely upon the grants which can be made from the two supplementary Funds, viz., the Victorian Era Fund and the Good Samaritan Fund—the income only of each being available.

The Committee desire to express their sincere thanks to all the supporters of the Institution, and especially would they mention the kindness of Her Majesty Queen Alexandra in again graciously allocating a grant of money from the proceeds of "Alexandra Day." Also to those noblemen, ladies and gentlemen who have allowed their gardens to be opened to the public and the proceeds, or part of them, to be given for the benefit of the charity, viz., the Rt. Hon. Earl Beauchamp, the Rt. Hon Lord Northbourne, the Lady Battersea Sir Frank Crisp, Bart., J.P., LL.B., C. W. Dyson Perrins, Esq., and the Rt. Hon. Lord Rhidlap.

The Committee very gratefully place on record their sincere appreciation of the Golden Wedding Gift of £500 from Sir Harry and Lady Veitch which has been invested for the benefit of the charity, and they heartily congratulate them on the happy occasion.

They further desire to offer their warmest thanks to the Honorary Solicitor, W. A. Bilney, Esq., J.P.; to Messrs. George Cobley and Co., the Honorary Auditors; to the Horticultural Press, and to many other friends for their invaluable services to the Institution.

It is also necessary to refer to the kindness of Sir Harry J. Veitch, Arthur W. Sutton, Esq., Geo. Monro, Esq., and Edward Sherwood, Esq. (Trustee), for generously giving a year's allowance of money to four candidates, who are most grateful for the help afforded them and who otherwise would have been amongst those still waiting.

The several Auxiliaries are still doing excellent work for the Institution.

It is with profound sorrow and regret that the Committee have to record the death of many staunch friends and supporters during the year. Amongst the foremost of these was Mr. Leopold de Rothschild, one of the warmest friends the Institution ever had. He was President at the Annual Festival Dinners in 1889 and again in 1913 when, through his instrumentality, large sums were raised for the funds on each occasion. Other friends who will be greatly missed are Messrs. O. O. Wrigley, W. J. Lucking (a subscriber for 60 years), C. J. Druery, William Marshall, Walter T. Ware, and Albert Brassey, J.P.

HARRY J. VEITCH,
Treasurer and Chairman of Committee.
GEORGE J. INGRAM,
Secretary.

The secretary presented the financial statement, the figures of which are given below.

A telegram was then read from Mr. Arthur Sutton, regretting his inability to be present at the meeting, and renewing his offer, made in previous years, to make a grant to the Society sufficient to place on the funds the most needy unsuccessful applicant.

Sir Harry Veitch moved the adoption of the Report and Balance Sheet, and the thanks of the meeting to the Committee for their services during the past year. He said that he was thankful that the Society had up to the present been able to pay its way without touching any of the investments, the realisation of which in present circumstances would be little short of a calamity. The lack of funds was in part due to the omission, for the past three years, of the festival dinner, which in former times used to be the means of obtaining generous subscriptions. Formerly it was the practice of the treasurer to keep a large sum on deposit, but the deposit had now shrunk to about £100. The expenditure on pensions amounted to about £4,000 a year. The Committee had been considering whether it would not be possible to increase the amount of the pensions, on account of the great rise in prices of food and other necessaries. It had to be borne in mind that the receipt of anything over £30 a year was in itself a disqualification for a pension, so it would be seen that the income of even the best-off of the annuitants was very small. The Committee had therefore agreed to recommend the taking of £120 or £130 from the Good Samaritan Fund, to supplement the usual allowances, during the remainder of the war period. An anonymous sympathiser had offered a sum of £250, on condition that three other donors of £250 were to be found, or he was prepared to give more, if others would do the same, in order to extend the work of the Society. There had been many generous gifts during the year; Sir Frank Crisp had given £50, as a special donation, and the late Mr. O. O. Wrigley £50. The auxiliary Societies were doing excellent work, and a cheque for £30 had been received from Worcester that day. The Committee would like to see fresh auxiliaries opened in other towns.

Sir Harry's motion was seconded by Mr. H. J. White, and carried unanimously.

Mr. W. A. Bilney then moved the re-election of Sir Harry Veitch as treasurer, expressing appreciation of the members of Sir Harry's invaluable services, and hoping that he would remain in office long enough to receive a jubilee testimonial. This was carried unanimously, and Sir Harry Veitch briefly replied.

Mr. Geo. Monro moved the re-election of Mr. G. J. Ingram as secretary, and referred to the arduous work performed, without any help, during the year. This was seconded by Mr. Poupart and carried unanimously. Mr. Ingram, in reply, expressed his pleasure in the work, and his determination to leave no stone unturned to obtain fresh subscriptions. Mr. J. McKerchar moved the re-election of the retiring members of the Committee, which was seconded by Mr. J. McLeod and carried unanimously. Mr. Monro replied on behalf of the Committee. The auditors and arbitrators were also re-elected. At this stage of the proceedings Messrs. H. J. White, G. Cox and J. McKerchar were appointed scrutineers of the ballot, and the meeting adjourned until 4 p.m., when the result of the election was declared as follows:—

RESULT OF ELECTION.

	Age.	Votes.
Bond, Thomas W.	74	5,076
May, Martha	77	4,394
Harding, Albert	78	4,076
Parr, Henry	75	4,040
Stone, Fanny	70	4,026
Morgan, Hannah	74	3,967
Smith, Sarah A.	68	3,966
Manning, Mary	72	3,808
Bradley, George	72	3,752
Walker, George	63	3,716
Orchard, Cornelius	71	3,657
Galt, Emma A	68	3,628
Gibson, Thomas	80	3,594
Roberts, Ann	73	3,275
Milford, Sarah A.	68	3,145

The candidate Mr. Edwin Tough, in respect of whom Mr. Arthur W. Sutton last year presented the sum of £20, was this year placed upon the funds under Rule III. 10. Sir Harry J. Veitch presented £16 for a year's allowance to the applicant Mary A. Beck, Mr. A. W. Sutton £20 on behalf of Charles Bridges, and Mr. Geo. Monro £10 for the benefit of Mary Pugh, all of whom were unsuccessful in obtaining election.

RECEIPTS AND PAYMENTS OF THE GARDENERS' ROYAL BENEVOLENT INSTITUTION.
FOR THE YEAR ENDING DECEMBER 31ST, 1917.

	£ s. d.	£ s. d.		£ s. d.	£ s. d.
To Balance with Treasurer, January 1, 1917	1,270 7 5		By Annuities and Gratuities		4,577 7 10
,, Balance with Secretary, January 1, 1917	5 4 6		,, Rent, Fire, and Lighting, and Salaries of Secretary and Clerk etc.	534 16 7	
,, Deposit Account	630 0 0		,, Printing and Stationery, &c. 102 8 1		
,, ,, Wolfe Legacy (including interest)	1,186 0 0		*Less* Advertisements 29 9 5		
		3,091 11 11		72 18 8	
,, Annual Subscriptions	1,152 4 0		,, Postages, Reports, Polling Papers, Appeals, and Ordinary	32 2 10	
,, Donations, including Special Gifts	1,166 14 4		,, Carriages, Telegrams, and Incidental Expenses	12 8 8	
,, Sir Harry J. and Lady Veitch's Golden Wedding Gift	500 0 0		,, Telephone Charges	7 5 0	
,, Legacy, W. Y. Baker, Esq.	250 0 0		,, Expenses of Annual Meeting and Election	5 19 11	
,, ,, N. N. Sherwood, Esq.	500 0 0		,, Advertisement	3 3 0	
,, ,, Robert Tait, Esq.	50 0 0		,, Bankers' Charges	0 4 3	
,, ,, L. Stonard, Esq.	50 0 0				668 18 11
,, Schroder Annuity	20 0 0		,, Investment of Sir Harry J. and Lady Veitch's Golden Wedding Gift	500 0 0	
,, Board of Agriculture, for special purposes	150 0 0		,, On Deposit Board of Agriculture Gift	150 0 0	
,, Dividend and Interest (less Tax)	853 9 6		,, Ditto	30 0 0	
,, Income Tax refunded	226 11 8		,, On Deposit, Wolfe Legacy and Interest	825 19 11	
,, Deposit Interest (Wolfe's Legacy)	39 19 11		,, *Balance with Treasurer, December 31, 1917	1,292 15 2	
		4 958 19 5	,, Balance with Secretary, December 31, 1917	5 9 6	
					2,804 4 7
	£8 050 11 4				£8 050 11 4

* £1,250 is required to meet the quarterly payments due on December 31, 1917.

The undersigned, having had access to the Books and Accounts of the Society, and having examined the foregoing General Statement and verified the same with the Accounts and Vouchers relating thereto, now sign the same as found to be correct, duly vouched, and in accordance with law.

GEORGE H. CORLEY & CO., Honorary Auditors,
Chartered Accountants.

VICTORIAN ERA FUND.

RECEIPTS.	£ s. d.	£ s. d.	PAYMENTS.	£ s. d.
To Balance, January 1, 1917		197 1 3	By Grants	258 0 0
,, Dividends	175 0 0		,, Balance, December 31, 1917	169 8 7
,, Returned Income Tax	55 7 4			
		230 7 4		
		£427 8 7		£427 8 7

GOOD SAMARITAN FUND

RECEIPTS.	£ s. d.	£ s. d.	PAYMENTS	£ s. d.
To Balance, January 1, 1917		256 11 5	By Grants	150 10 0
,, Donations	0 10 0		,, Balance December 31, 1917	261 12 9
,, Dividends	121 0 9			
,, Returned Income Tax	34 0 7			
		155 11 4		
		£412 2 9		£412 2 9

ROYAL HORTICULTURAL.

JANUARY 29.—The usual fortnightly meeting was held on Tuesday last, in the Drill Hall, Buckingham Gate, Westminster. The exhibition was again a very small one, Orchids, as at the last show, comprising the principal feature.

The only awards made by the Floral Committee were four medals to collections.

Two exhibits before the Fruit and Vegetable Committee were of more than usual interest; one was a collection of Onions grown at Wisley from both autumn-raised and spring-sown plants; the other consisted of seedling Apples shown by Messrs. Laxton Bros.

Floral Committee.

Present: Messrs. H. B. May (Chairman), John Green, G. Reuthe, John Heal, F. McLeod, C. R. Fielder, J. W. Barr, J. T. Bennett Poë, R. C. R. Nevill, A. Turner, J. Dickson, C. Dixon, W. P. Thomson, C. E. Pearson, H. Cowley, E. H. Jenkins, W. J. Bean, J. Jennings, W. H. Page, A. G. Jackman, and R. C. Notcutt.

GROUPS.

Messrs. ALLWOOD BROS., Wivelsfield, exhibited excellent blooms of Perpetual-flowering Carnations. Prominence was given to a new Perpetual-Malmaison variety named Exquisite, a

large, milky-white flower, with very faint blush on some of the inner petals. The finest variety was Marv Allwood, by reason both of the beautiful colour and of the perfect form. Other noteworthy varieties were Wivelsfield White, Marion Wilson, and an unnamed scarlet seedling. (Silver Banksian Medal.)

Messrs. H. B. MAY AND SONS, Edmonton, were awarded a Silver Banksian Medal for exotic Ferns, with groups of Primula obconica grandiflora interspersed, and a row of Palms at the back.

MR. G. REUTHE, Keston, Kent, exhibited hardy plants in variety, including a box of Saxifragas in a great number of species and varieties, also some excellent little shrubs and Conifers in pots. (Bronze Banksian Medal.)

Mr. L. R. RUSSELL, Richmond, showed ornamental trees and shrubs as pot specimens. He had also large plants of Hamamelis in flower, including H. arborea, H. mollis, and a hybrid named Russelliana, of which H. Zuccariniana was the seed parent, and H. arborea the pollen parent. The hybrid has a spreading habit, and in this respect resembles H. arborea, but it is in most respects more like the seed parent, differing chiefly in its rather longer and brighter yellow petals, which are, furthermore, not so twisted as in H. Zuccariniana.

Messrs. H. CHAPMAN, LTD., Rye, showed the first new Daffodil of the season in the variety Scoutmaster, a bicolor Ajax variety, with a short, wide trumpet, prettily frilled at the edges, and with cream-white perianth. The stem is long and wiry, and the flower stands up well.

Orchid Committee.

Present: Sir Jeremiah Colman, Bart. (in the chair), Sir Harry J. Veitch, Messrs. Jas. O'Brien (hon. secretary), William Bolton, W. H. White, J. E. Shill, R. Brooman-White, W. H. Hatcher, R. G. Thwaites, J. Charlesworth, R. A. Rolfe, Pantia Ralli, J. Wilson Potter, Fred K. Sander, E. R. Ashton, and T. Armstrong.

AWARDS.

FIRST-CLASS CERTIFICATE.

Cypripedium Euryhades The Baroness (*Alcibiades* × *Leeanum Euryades*).—Shown by Mr. J. E. SHILL, The Dell Gardens, Englefield Green. A grand Cypripedium, and one of the finest developments among Euryades crosses. The large and perfectly formed flower has a circular, white dorsal sepal, of fine substance, with a pale, gamboge yellow base, the surface bearing large, deep claret blotches, changing to rose towards the margin. The petals are broad, honey yellow in colour, with claret spotting on the basal half, the outer half and the lip being tinged with deep mahogany-red.

Cattleya Monarch Bryndir variety (*Trianae* × *Empress Frederick*), from Dr. MIGUEL LACROZE, Bryndir, Roehampton (Orchid grower, Miss Robertson). A perfectly formed flower of large size and very fine colour. The sepals, and nearly orbicular crimped-edged petals, are light blush rose, the well-rounded lip rich ruby purple in front, with gold lines running on a rose-coloured ground from the base, and a light yellow patch on each side of the tube.

PRELIMINARY COMMENDATION.

Odontoglossum wGatton Princess (*Queen of Gatton* × *eximium*), from Sir JEREMIAH COLMAN, Bart., Gatton Park, Surrey (gr. Mr. Collier). A worthy descendant of O. Queen of Gatton, which is the finest yellow ground Odontoglossum, its perfect shape being reproduced in the seedling, although the desirable yellow ground has been lost. The surface of the flower is almost covered with deep ruby claret blotches, the white appearing only in slight markings and at the margins of the segments.

OTHER NOVELTIES.

SIR JEREMIAH COLMAN, Bart., showed flowers of Cypripedium insigne Gatton Park variety, an improvement on Harefield Hall and Odontioda Bradshawiae, raised from two forms of Bradshawiae, the bright red flower showing a further advance towards Odontoglossum, and elimination of the features of Cochlioda Noezliana.

Dr. MIGUEL LACROZE exhibited Sophro Laelio Cattleya Isabella (S. C. Marathon × C. Fabia), of indifferent shape, but very bright colour, and Brasso-Cattleya Bianca majestica, a blush-white flower flushed with pale pink.

Colonel LEITH, Grey Court, Riding Mill-on-Tyne (gr. Mr. Jas. Renwick), showed Odontoglossum Colonel Leith (Rossii × Uro-Skinneri), an interesting hybrid, intermediate between the two parents. The sepals and petals are densely spotted with chocolate-red. The lip is tinged with pale lilac, the fleshy crest being whitish and the slender column tinged with rose.

GROUPS.

Messrs. ARMSTRONG AND BROWN, Orchidhurst, Tunbridge Wells, were awarded a Silver Flora Medal for a fine group of Odontiodas, Cattleyas, and Odontoglossums. The finest plant of a selection of their famous strain of Odontoglossums flowering for the first time was O. Corona (eximium × Menier St. Vincent), a large and broadly proportioned flower. The inner parts of the sepals and petals are claret-red, the outer segments and the margins white. The lip is white in front, and marked with purple around the yellow crest. Other fine new forms were O. Orissa (ardentissimum × Hylandianum), O. Fabia splendens (Aglaon × eximium), and Sophro-Cattleya Niobe (S. C. Saxa × C. Octave Doin), a pretty new hybrid, with neatly-formed flowers of cream colour slightly tinged with pale rose. The lip is yellow at the base, the front and margins of the side lobes ruby-red.

Messrs. CHARLESWORTH AND CO., Haywards Heath, were awarded a Silver Flora Medal for a group of Odontoglossums, Laelio-Cattleyas, Cypripediums, and others. Specially noteworthy were Vanda teres alba, pure white; Odontioda Joan var. pulcherrima, brilliant scarlet; and Odontoglossum Thwaitesii rubescens.

Messrs. HASSALL AND CO., Southgate, were awarded a Silver Banksian Medal for a group of Cymbidiums, including Alexanderi, Moira, Sybil, and Capella, and the new Odontoglossum Sybil (Thompsonianum × Aireworth), a flower of medium size, dark claret in colour, with white tips and margins.

Messrs. SANDERS, St. Albans, staged a small group in which were noted Cymbidium Albatross, one of the largest and best formed flowers; Brasso-Cattleya Fascinator (R. C. Digbyano Mendelii × C. Enid); and the pretty Sarcolabium bellinum magnificum.

Fruit and Vegetable Committee.

Present: Messrs. W. Pompart (chairman), W. Bates, W. H. Divers, Edwin Beckett, A. Bullock, E. A. Bunyard, G. P. Berry, J. G. Weston, and Owen Thomas.

From the Society's gardens at Wisley a collection of Onions was exhibited, representing 87 stocks raised from autumn-sown plants, and 45 stocks from spring-sown stocks. It was clear from a comparison of the two exhibits that the autumn-sown plants were in every way superior to those sown in the spring; they were firmer, larger, and had the deep russet-brown skin which betokens late keeping quality. The following varieties were the best: Autumn Triumph, Giant Zittau (Harrison's strain), Froxfield, The Sutton Globe, Yellow Giant Zittau, and Brown Globe. The latter was not exceptionally large, but the specimens were very firm and solid. The weight of the produce obtained per hundred plants was given, and the best croppers were Autumn Triumph, 62¼ lbs.; Trebons, 60½ lbs.; Giant Zittau (Harrison's), 54½ lbs.; White Spanish, 47½ lbs.; Yellow Giant Zittau, 46¼ lbs.; Cranston's Excelsior, 40½ lbs.

Mr. A. DAWKINS, Chelsea, showed splendid bulbs of Onion Autumn Triumph.

Messrs. LAXTON BROS., Bedford, exhibited seedling Apples, many of which had Cox's Orange Pippin in their pedigree. It was to be regretted that the fruits were past their best condition, and it was difficult to appraise their merits. Some were of exceedingly good flavour, and a few, including Laxton's Superb and Worcester Pearmain × Cox's Orange Pippin, attractive in appearance. Court Pendu Plat, a very late-blooming Apple, and valuable on that account as escaping injury from spring frosts, was used as a parent with Cox's Orange Pippin. The fruit resulting from this cross was of good flavour, and a promising late Apple. The reciprocal cross gave a fruit very like Cox's Orange Pippin, and seemed as if it would prove a valuable acquisition. It was named William Watson; most of the others were shown under numbers only.

Messrs. WATERER, SONS AND CRISP, LTD., Twyford, exhibited a new Apple named Park Royal, closely resembling Bess Pool. The fruits were of good appearance and in fine, solid condition.

CROPS AND STOCK ON THE HOME FARM.

SEASONABLE REMARKS.

ALTHOUGH the frosty weather hindered the sowing of late Wheat, it has had a beneficial effect on the land, and the soil will be in excellent condition when the time arrives for the sowing of spring Corn—Oats, Barley, and Wheat. Where stiff land has been ploughed after Wheat, Mangolds, Turnips, Potatos, and other crops, the pulverising effect of the frost on such land will be beneficial in providing a good tilth in February and March for the early sowing of Oats. Whenever possible, keep the plough going, even while the frost is keen, but when the ground is too hard for this work other occupation must be found for the horses, such as getting manure on the land for the Potato and Mangold crops, and the carting and spreading direct on the land of gas lime. The value of gas lime is much underrated by many, especially where finger-and-toe or club disease is troublesome to Turnips and Brassicas. Where Potatos are to be grown on the same site a second season, or where grass land is to be ploughed for this crop, gas lime spread over the surface at the rate of 2 tons per acre will have a sweetening effect and do much to check wireworms and slugs. Personally, I do not fear wireworms to any serious extent in Potatos in newly ploughed-up grass land; the effect these pests have is more imaginary than real. If the lime is fresh from the gas works it will be well to allow it to lie on the surface for a time to lose its more caustic properties, and especially where a heavier dressing than is necessary should have been given. When used in excess, gas lime is injurious to crops for a season or two. Chalking the land is excellent work for frosty weather; not nearly enough chalk is employed on the land. When one considers its sweetening influence on soils, acting in the same manner as lime, only in a lesser degree, in setting free the humus collected in the soil, especially where heavy dressings of manure have been employed for such crops as Mangold and Potatos, its value is considerable. Our forefathers valued this natural means of enriching the land much more than we do. Stiff, heavy, clay soils are much improved by a dressing of 20 tons of chalk per acre. Spread it direct from the cart on to the land, when frost will cause the lumps to crack and crumble. Chalk has a more lasting effect on the land and crops than slaked lime, which is, however, more rapid in its action.

Good roads are a convenience. Many people when repairing roads that have deep ruts fill the depressions with hard material, such as stones, broken bricks, and coarse gravel, instead of clearing out the loose soil and mud first, with the consequence that the road is little better than previously. Thoroughly clear away all soft matter to ensure a solid foundation before applying the stones. In cases where extra soft and deep places are present a layer of hedge trimmings or faggots will make an excellent foundation and save much hard material.

The clearing away of refuse in the rick yard is useful work to do in winter. Straw should be carted into the yards for the store cattle or put into heaps to be temporarily thatched to preserve it in good condition until required. Where Corn that is much infested with Docks or Thistles has been thrashed the extreme refuse should be deposited in an out of the way corner where fowls can scratch it over. On no account should such litter be added to the manure heap or carted into the yard, as the weed seeds it contains would do much harm to future crops. The cutting of hedges is useful occupation for the staff. Many hedges in this part of the country have been neglected in the last year or two and they need drastic treatment to get them in good condition again. I am cutting many overgrown hedges around cornfields close to the ground, as from experience gained last harvest there is a difficulty in drying the Corn properly within several yards of overgrown hedges. *Edwin Molyneux.*

MARKETS.

COVENT GARDEN, January 30.

Cut Flowers, &c.: Average Wholesale Prices

	s.d.	s.d.
Arums—		
— (Richardias), per doz. blms.	4 0– 5 0	
Azalea, white, per doz. bunches	8 0– 9 0	
Camellias, white, per doz.	2 0– 2 6	
Carnations, per doz.		
— blooms, best American var.	3 0– 3 6	
Chrysanthemums—		
— white, per doz. blooms	6 0– 8 0	
— white, per doz. bunches	18 0–60 0	
Croton leaves, per bun.	1 3– 1 6	
Daffodils (single), per doz. bun.—		
— Emperor	15 0–18 0	
— Golden Spur	12 0–15 0	
— Henry Irving	9 0–10 0	
— Princeps	10 0–15 0	
— (double), per doz. bun.—		
— Van Sion	12 0–15 0	
Freesia, per doz. bun.	6 0– 8 0	
Heather, white, per doz. bun.	6 0– 9 0	
Lilium longiflorum, long	4 6– 5 0	
Linum, con.—		
— lanceolatum album, long	3 6– 4 0	
— rubrum, per doz. long	5 0– 6 0	
— — short, per doz. blooms	3 6– 4 0	
Lily-of-the-Valley, per doz. bun.	36 0–42 0	
Narcissus, Grand Primo, per doz. bun.	8 0–10 0	
— ornatus	12 0–15 0	
— Soleil d'Or	6 0– 8 0	
Orchids, per doz.—		
— Cypripediums	3 6– 4 0	
Pelargoniums, double scarlet, per doz. bunches	12 0–18 0	
Roses, per doz. blooms—		
— Richmond	12 0–15 0	
Snowdrops, per doz bun.	4 0– 6 0	
Tulips (single), per doz. bun.—		
— Mauve	60 0–65 0	
— Prince of Austria	60 0 —	
— (double), per doz. bun.—		
— Murillo	60 0 —	
Violets, per doz. bun.	6 0– 8 0	

REMARKS: There has been a general increase in the quantities of cut flowers during the past week, and prices are greatly reduced, especially for coloured varieties. Home-grown Daffodils, such as Golden Spur, Princeps, and Emperor, are arriving in good condition. Boxes of Pheasant Eye Narcissus are being received from the Spalding district. Tulips are available in the following varieties: La Reine (white), Prince of Austria (bronze), Murillo (double pink), and a few bunches of mauve, which find a ready sale. Snowdrops are also arriving in excellent condition. The supplies from the Channel Islands are gradually increasing, the chief kinds are Yellow Narcissus Soleil d'Or, Daffodils, white Narcissus Grand Primo, and a few boxes of Paper-white Narcissus and Freesia. French flowers, although more plentiful, are not in demand owing to the poor quality. Many blooms are unsaleable when they arrive here. Colder weather might improve their condition.

The Plant Market is entirely closed for the present.

Vegetables: Average Wholesale Prices.

	s.d.	s.d.
Artichoke, Chinese (Stachys) per lb.	1 3– 1 6	
— Jerusalem, per ½ bushel	2 6 —	
Asparagus (English), per bundle	10 0–12 0	
— Natonal, per bundle	24 0– 3 0	
— (Paris Green), per bundle	8 0– 9 0	
Beans:—		
— French (Channel Islands), per lb.	3 6– 4 0	
Beetroot, per bus.	3 0– 4 0	
Brussels Sprouts, per ½ bus.	2 6– 3 0	
Cabbage, per tally	4 0– 5 0	
Carrots, new, per doz. bunches	4 0– 5 0	
— per bag	1 6– 2 6	
Cauliflowers per doz	4 0– 6 0	
Celeriac, per doz	3 0– 6 0	
Celery, per bundle	1 6– 4 6	
Chicory, per lb.	0 10– 1 0	
Cucumbers, per doz.	18 0–24 0	
Endive, per doz	3 0– 5 0	
Garlic, per lb.	0 8 —	
Greens, per bag	1 6 —	
Herbs, per doz bun.	4 0– 8 0	
Horseradish, per bundle	8 0	
Leeks, per bus.	5 0– 6 0	
Lettuce, Cabbage, per doz.	1 6– 2 6	
Mushrooms, per lb.	2 6– 3 0	
Mustard and Cress, per doz. punnets	0 10– 1 0	
Onions, spring, per doz. bun.	1 6– 2 0	
— Valencia, per case (4 tiers)	38 0–43 0	
— — (5 tiers)	38 0–43 0	
Parsnips, per bag	4 0– 5 0	
Peas, per lb.	2 0– 2 6	
Potatos, new, per lb.	1 0– 1 3	
Radishes, per doz. bunches	1 6– 2 0	
Rhubarb, for 3 per doz.	1– 2 3	
Savoys, per tally	4 0–12 0	
Scalkale, per punnet	2 0– 2 6	
Shallots, per doz. lbs.	7 0– 8 0	
Spinach, per bus.	2 0– 4 0	
Turnips, per bag	3 0– 6 0	
Turnip tops, per bus.	2 0– 3 0	
Watercress, per doz.	0 8 0 10	

Fruit: Average Wholesale Prices.

	s.d.	s.d.
Almonds per cwt.	150 0–170 0	
Apples:—		
— cooking, per bus.	12 0–18 0	
— dessert (English), per ½ bus.	6 0–16 0	
— Russets, French, in cases of about 60 to 70 lbs.	36 0– 4 0	
Dates, per box	1 4 —	
Grapes, Black Alicante, per lb.	3 0– 4 0	
— Almerias, per barrel (½ dog. lbs.)	4 0– 70 0	
— Gros Colman, per lb	3 0– 5 0	
Lemons, per case	55 0– 60 0	
Nuts, Barcelonas, per bag	150 0 —	
— Brazils, new, per cwt.	190 0 —	
— Cob, per lb.	1 4 —	
Oranges, per case	65 0–100 0	
— navel, per case	55 0– 65 0	
— Tangerines, per box	2 6– 5 0	
Pears, per ½ bus.	5 0–10 0	
— (French), Passe Crassane, per doz	10 0–15 0	
Walnuts, French, kiln dried, per bag	23 0–120 0	

REMARKS: A fair quantity of English Apples is arriving, chiefly Bramley's Seedling, Dumelow's Seedling, and Lane's Prince Albert. Cases of French Russets are also obtainable. Black Alicante and Gros Colman Grapes are available, but supplies are decreasing. There are still large supplies of Almerias (Spanish). Lemons and Oranges have advanced in price. The following forced vegetables are on offer this week: English Asparagus, Paris Green and National Asparagus (French), Mushrooms, Seakale, Chicory, Cucumbers. There are fairly large quantities on offer of Garlic, Shallots and Onions (Valencia and French). The market is well supplied with all ordinary vegetables and roots. *E. H. R. Covent Garden Market, January 30, 1918.*

Obituary.

G. TURNER.—We regret to record the death of Mr. G. Turner, at Malden, Surrey, on January 13, at the age of 72 years. He had recently recovered from a short attack of bronchitis, but died from a heart attack.

MISS ETHEL SARGANT.—We learn with regret of the death of Miss Ethel Sargant, F.L.S. Miss Sargant was distinguished for her researches in botany, and was the first woman president of a section of the British Association. She died at Sidmouth on January 16, at the age of 54.

F. MENTEITH OGILVIE.—We deeply regret to announce the death of Mr. F. Menteith Ogilvie, The Shrubbery, Oxford, who died recently from pleurisy and pneumonia after a very brief illness. Mr. Ogilvie was one of the oldest and most successful of Orchid enthusiasts, and his collection at The Shrubbery was one of the choicest and best-cultivated in the home counties. He was for many years a member of the Orchid Committee of the Royal Horticultural Society, and a frequent exhibitor of new and rare Orchids.

ENQUIRY.

CAN any reader inform me where I can obtain plants of the old Perpetual-flowering Carnation "H. Elliott"? *F. W.*

CELERY DISEASED: *Miss P.* The disease to which you refer is probably Celery Leaf Blight, Cercospora apii, a fungus causing yellowish spots on the foliage. Spray the plants with ammoniacal carbonate of copper soution when they are young, and repeat the spraying occasionally during the period of growth.

CITRUS MITIS: *Amateur Gardener.* The idea that Citrus mitis is a hybrid between Aegle sepiaria and the Sweet Orange of Florida has no foundation in fact. It is a native of the Philippine Islands, and was first described in 1837 by Blanco in his flora of those isles, where it is considered to be a distinct species, but in the latest edition of Blanco, *Flora Philippinarum*, Appendix, p. 37, published in 1880, it is stated to be identical with C. limetta. In Bailey, *Cyclopædia of Horticulture*, Vol. 2, p. 784, 1914 edition, it is, however, retained as a distinct species. The account of it there states that: "This tree, a native of the Philippine Islands, is commonly cultivated in Hawaii, where it is wrongly called 'China Orange.' It was introduced into Florida by the U.S. Dept. of Agriculture from Panama, and was for a time distributed by nurserymen under the erroneous name of To Kumquat. It is very hardy, probably as hardy as the Satsuma, or even more so. It can be budded on Sour Orange or on Trifoliate stocks." In America this hardy Orange is stated to be a promising fruit for home use, for culinary purposes. We have no knowledge of its cultivation in England or Ireland, but doubt if it would produce palatable fruit in this climate.

CUCUMBER SOIL FOR ALLOTMENT: *L. F.* You can spread the old Cucumber soil over your allotment now, but if there was any eelworm present on the roots of the Cucumbers last year, you should first sterilise the soil by baking or steaming, otherwise the eelworm will be communicated to the fresh soil. The lime can also be applied at the present time, but it will be better to defer using the Vaporite until later in the season, when the ground insects are more active.

FERTILISERS: *Potassa.* You may apply the superphosphate to your vegetable plot after the ground has been dug and prepared for sowing and planting. Superphosphate and sulphate of ammonia are excellent manures for Potatos, and if the former is applied at the time when the rows are made for planting, it will become incorporated with the soil, but at not too great a depth. The sulphate of ammonia may be used along the rows when the Potatos are sprouting through, but take care not to allow it to touch the foliage. With regard to the packet labelled No. 1, we think you are correct in assuming it to be some form of nitrate, but it is certainly not nitrate of soda, which, as you say, deliquesces in winter. Your friend, from whom you obtained the manure, should know best what the "No. 2" sample is; in any case, if you know that they are garden fertilisers, there would be no harm in using them, but try the effect of a little at first.

HYDRANGEA: *K. M. S.* Cut the plants of Hydrangea down to the ground at once, and give the roots a top-dressing of rich loam and manure at the same time if it is not possible to turn them out and repot them. When growth commences thin the shoots to leave only a few of the strongest, the number being according to the size of the plant. Feed the roots with liquid manure at least once a week. To obtain the blue colouring is a difficult matter, but you might try sulphate of iron in small, regular doses throughout the growing season. Powdered alum has also been recommended for producing the blue colour in the flowers.

PROPAGATING SHRUBS: *D. C.* You can propagate Daphniphyllum glaucescens, Lonicera Hildebrandtii, and Viburnum Carlesii by means of half-ripened wood in gentle bottom heat in August. The various ornamental vines, including Vitis inconstans (Ampelopsis Veitchii) can also be increased in the same way, or, in the case of the larger-wooded kinds, by means of eyes, in the same way as Grape vines are propagated. Idesia polycarpa can be rooted from soft cuttings taken early in the year and put in brisk bottom heat, but these are difficult to deal with. All these plants root readily when layered, which is the easiest way to propagate them if it is possible to do so. Trochodendron aralioides can only be increased by seeds, which are freely produced on old plants. Most of the Cotoneasters come true from seed, the exceptions being some of the varieties, but cuttings of all can be rooted as advised above, or outdoors in a sheltered spot in winter.

NAMES OF FRUITS. *A. G. Gentle.* 1, Da Hogg; 2, Barbarossa (?); 3, Gros Colman; 4, Gros Maroc; 5, Lady Downe's; 6, Muscat of Alexandria. (For satisfactory identification a whole bunch of fruits and a well-developed leaf of each variety should have been sent.)—*J. J. W.* Shepherd's Newington.—*Motyar.* Apples: 1, Hormead Pearmain; 2, Flower of Kent; Pears: 1, decayed; 2, not recognised; 3, Catillac; 4, decayed; 5, Uvedale St. Germans; 6, decayed.—*E. W. B.* 1, Norfolk Stone Pippin; 2, Dutch Mignonne (syn. Reinette du Caux); 3, Golden Noble; 4, Adams's Pearmain.—*S. A.* Apple Lady Henniker; Pear Glou Morceau.—*Shropshire.* 1, Cellini; 2, Broad End; 3, not recognised; 4, Margil; 5, decayed; 6, Calville Rouge d'Hiver; 7, Cockle Pippin; 8, Newtown Pippin.—*A. H. C.* 1, Queen Caroline; 2, Melon Apple; 3, not recognised.

NAMES OF PLANTS.—*Correspondents not answered in this issue are requested to be so good as to consult the following number.*

1 *H. C.* Phillyrea decora (P. Vilmoriniana). *Conifer.* 1, Libocedrus decurrens; 2, Phlomis fruticosa; 3, Berberis vulgaris; 4, Clematis sp. (send in flower).

TREE DISFIGURED: *A. C. B.* In the absence of any special provision in the tenancy agreement, the tenant's duty would be to see that the tree is pruned with reasonable care and skill; if, for want of this, the tree has been injured, the landlord would have a claim for damages. The latter would, however, have no right to enter and cut down the tree merely because it now disfigures the view from his premises.

Communications Received.—C. F.—G. H.—M. R., Ltd.—F. B. L.—J. C.—C. L.—C. H. C.—C. W. M.—Potato Grower—J. W.—W. W.—W. W., Reading—G. J. I.

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ILLUSTRATIONS.

NOTES FROM KEW. II.*

HYBRID Cymbidiums are a great horticultural achievement. The introduction of C. insigne from Annam about ten years ago made them possible. Before we possessed this species our garden Cymbidiums were either on the coarse, dull coloured side, typified by C. Lowianum, or were not good garden plants, which I think is an honest opinion of C. eburneum. Not only is C. insigne a winter flowering species, it is also stately and handsome, and if the spike is overlong it is a good fault. By crossing C. insigne with the other species breeders have produced a race which is likely to hold for ever a foremost place among the best decorative Orchids. There is a good set of these hybrids at Kew, thanks largely to Sir George Holford, who presented some of his best varieties, and they are now in flower. Cattleya treatment appears to suit them exactly, except that, being gross feeders, they need a strong, loamy soil. The spikes of flowers when cut are superb for decorative uses, and they keep fresh for weeks too long, perhaps, for those people who soon tire of things beautiful.

A plant pathologist in quest of a promising subject for research might give his attention to the behaviour of Orchid roots. Every experienced Orchid grower has been troubled by the death of the roots of Cattleyas, Odontoglossums, Dendrobiums, and others, from no evident cause. It does not appear to be due to excess of moisture during the resting season, nor to drought. Since I have been connected with Kew, Odontoglossums have lost practically every root during the winter, even although the plants had filled their pots in summer with roots like a ball of twine. And it is the same to a large extent with Cattleyas. This annual loss of roots is accompanied by considerable shrinking of the pseudo-bulbs, so that when the plants begin to pick up in spring they have losses to recover before they can make new growth. It is not a question of soil; of that I am certain; but it may be one of atmosphere. There is poison enough in the air at Kew, and especially in winter, to cripple expanding flowers and foliage. Orchid roots are said to have a porous, paper-like skin which absorbs moisture from the air. Every part of the living root does this. In dry weather this papery covering prevents transpiration from the root-cells, and in wet weather condenses and supplies water to them. To put it roughly, the outer bark of Orchid roots is a water catcher and holder from which the root cells are fed.

The following experiment with Orchids may be of interest to growers. About three years ago half a dozen small plants were potted in ordinary sponge to test it as a substitute for peat fibre. Sponge, being clean and lasting, possesses in its other properties, so it was thought, exactly what epiphytic Orchids require. The result is interesting, the plants having rooted freely in and about the sponge, the roots and leaves being quite healthy. Although the same sponge has been in use over three years, it is still tough and porous. The experiment is being repeated on a larger scale with Cattleyas, Dendrobiums, Vandas, Phalaenopses, Bulbophyllums, Stanhopeas, Odontoglossums, and Oncidiums. Sponge "trimmings" can be purchased at a reasonable price compared with the present price of Osmunda-fibre. Besides, Osmunda and all Fern roots in use for this purpose break down too quickly, and are then mischievous.

The genus Celmisia continues to puzzle British gardeners. A few years ago we thought at Kew that the secret of growing the plants had been hit upon; a corner outside the Temperate House, shaded all day by the walls of the building, was heaped with sandstone and peaty soil, in which about a dozen species flourished for several years, but after that they steadily declined, and we could not perceive why. Captain Dorrien-Smith, who visited New Zealand some ten years ago, brought home a collection of living plants and information as to the conditions in which Celmisias grow wild: he considered that a wet soil and full exposure to sunshine were the essentials to success. So some were tried in the rock garden at Kew, where they have been for about five years. The plants are evidently hardy enough to live through our winters, as they look little the worse for the recent severe frost. Still, they have not made good. I saw the plants at Tresco, in fact, helped Captain Dorrien Smith to plant them, nine years ago, and they may have done better than the Kew plants. Celmisias are worth struggling with, for if we could discover their secret and get them to do their best in this country they would add a new and charming feature to the Alpine garden. The species growing in the Kew rockery

FIG. 22. CELMISIA SPECTABILIS (see p. 52)

* A previous article appeared in the issue of January 19.

are C. verbascifolia, C. Munroi, C. grandiflora, C. petiolata, C. Lindsayi, C. spectabilis (see fig. 22), C. hieracifolia, and C. holocericea.

The first Rhododendron to flower outside this year was R. parvifolium, the second being R. mucronulatum, which might well be called the Japanese form of R. dauricum, another early species. When flowers are scarce out-of-doors, these Rhododendrons are most welcome, otherwise they are of the small fry of the genus. The few days of sunshine between January 21 and 25 brought them out with a rush, as also it did the Winter Sweet, Yellow Jasmine, and the Witch Hazels (Hamamelis). A group on a large scale composed of Hamamelis, Yellow Jasmine and Winter Sweet would be a pleasing feature in any large garden or park; with Christmas Roses as a ground setting the combination would be better still.

What a fine forcing bush Rhododendron racemosum is (see fig. 23). It has been forced for the greenhouse at Kew for the past three winters, but they are none the worse. I may state that fire-heat is not used in the Himalayan wing of the Temperate House unless frost is severe, a few degrees not mattering for the inmates of this house. Evidently the Lobelia cannot bear frost.

There is some danger of the beautiful Malayan Rhododendrons raised by Messrs. J. Veitch and Sons being lost to cultivation. The only collection of them known to me is at Kew. At the R.H.S. fortnightly meetings some years back an exhibit of cut blooms of these Rhododendrons formed a part of Messrs. Veitch's "stall," and it was Mr. John Heal's boast that he had been able to show them at every meeting for several years without a break. The plants require more heat than other Rhododendrons, for they are stove rather than greenhouse plants, and they easily get out of condition. But they are worth whatever their successful cultivation may cost, and it is to be hoped some nurserymen will continue to grow them. No one has succeeded in hybridising Rhododendrons proper with these Vireyas, as Blume, a Dutch botanist, called them: indeed, there are very good characters of habit, foliage, flowers and fruit to support Blume's view that they are not Rhododendrons. Among the many successes of Mr. John Heal in hybridising I would give first place to his work with these plants. Cuttings of the young shoots, if inserted in a close propagating frame, root freely at any time of the year. The plants are always making new growth, consequently they have no definite flowering season; growing shoots and open flowers occur together, as may be seen on the plants in the Temperate House at Kew, where for some time there has been a good show of the flowers.

Mr. H. Kempshall, Abbotsbury Gardens, writes me that in the winter garden there Buddleia asiatica is grown as a climber to flower in winter, and that he has measured flower-sprays 27 inches long, their fragrance being delightful. He also grows, under the name of B. Colombae, a plant obtained from a Continental garden by the late Lord Ilchester, which I find, on comparison, is B. officinalis (*Bot. Mag.*, t. 8401), a Chinese species, introduced by Wilson and flowered in a greenhouse at Kew in November, 1910, continuing to flower till the following February. It has grey-green, lanceolate leaves and fragrant flowers in compact axillary tufts; the blossoms are mauve colour with a ring of red at the mouth of the tube. Both this species and B. asiatica are worth growing in pots with Chrysanthemums to flower under glass in winter.

How is it that soil beds under glass so quickly get out of condition? Good loam or peat, or a mixture of both, may be used according to the requirements of the plants to be grown, but in a few years it becomes a close, fibreless, sludge-like mass, in which no plant can grow healthily. This does not happen when the beds are in the open. Beds in the Palm House and Temperate House at Kew invariably behave in this way, and it is no light matter to renovate them and not injure the plants. *W. Watson.*

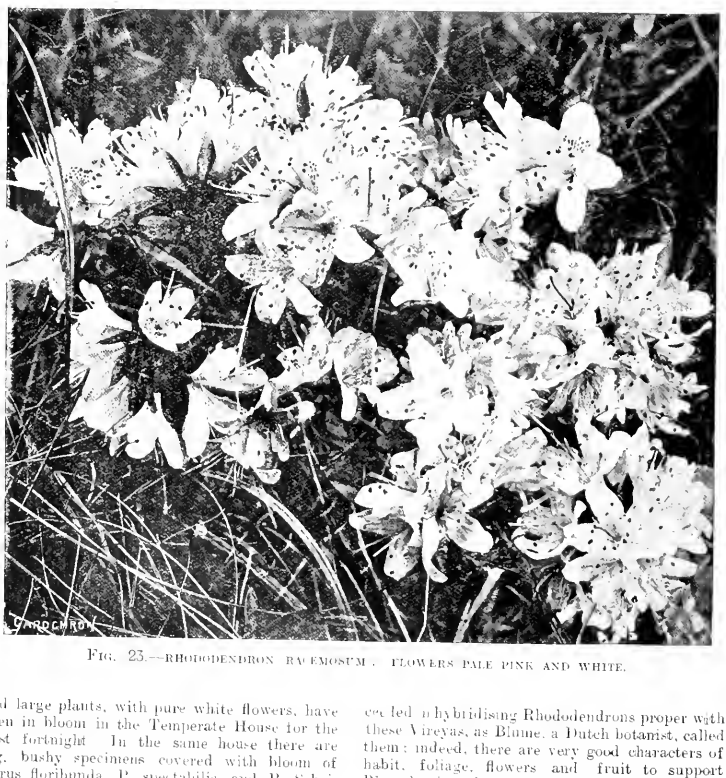


FIG. 23.—RHODODENDRON RACEMOSUM. FLOWERS PALE PINK AND WHITE.

and large plants, with pure white flowers, have been in bloom in the Temperate House for the past fortnight. In the same house there are big, bushy specimens covered with bloom of Pyrus floribunda, P. spectabilis, and P. Scheideckeri, three of the best shrubs for forcing. A tree like specimen with many branches bearing huge heads of bright yellow flowers of Senecio grandifolius (Ghiesbreghtii), and a good show of Acacia cultriformis, A. pulchella, A. pravissima, A. juniperina, and A. longifolia, with numerous other species to follow shortly, are the present floral attractions of this house.

Several tall, big-leaved plants growing with the Himalayan Rhododendrons arrest the attention of visitors. There are tree Lobelias from Mount Kenia, British East Africa, an account of which, with illustrations, appeared in the *Gardeners' Chronicle*, March 4, 1916, p. 125. The Kew plants are about 10 feet high, with a thick, unbranched stem and broad leaves a yard long; when they flower they promise to be imposing. Recent frosts have nipped their leaves somewhat.

ORCHID NOTES AND GLEANINGS.

NEW HYBRIDS.

CYMBIDIUM VIRGO.—A flower of this new hybrid, raised between C. Woodhamsianum (Lowianum × eburneo-Lowianum) and C. Pauwelsii (insigne × Lowianum), is sent by Mr. W. Walker, gardener to G. Hamilton-Smith, Esq., Northside, Leigh Woods, Bristol, in whose gardens hybrid Cymbidiums are well represented. In this cross, as in the case of C. Woodhamsianum, C. Lowianum is closely followed in every feature, and the influence of C. insigne and C. eburneum, except in inconspicuous details, obliterated. It is a well-formed flower, 4 inches across, having sap-green sepals and petals with darker lines along the nerves. The lip is cream-white tinged with green on the side lobes, the front lobe bearing the broad chestnut-red band characteristic of C. Lowianum within the whitish margin.

ODONTIODA LUMINOSA.—A flower of this handsome hybrid, raised from Odontoglossum Rossii rubescens and Odontioda Charlesworthii (Cochlioda Noezliana × Odontoglossum Harryanum), is sent by Richard Ashworth, Esq., Ashlands, Newchurch, near Manchester, in whose garden the plant first flowered in 1915. The neatly formed flower is very attractive, and has a remarkable contrast in colour. The sepals and petals are deep vinous-red with a faint gold shade; the lip, which plainly indicates O. Rossii, is cream-white at the base, with a prominent claret coloured crest, the front lobe being bright rose shading to rose-purple in the centre.

ODONTOGLOSSUM SEEDLINGS.—Mr. Ashworth also sends flowers of three finely coloured seedling Odontoglossums. Two of the varieties have heavy violet markings, and it is desirable that this colouring should be preserved, which might be done by fertilising with their own pollen and selecting from the progeny, rather than crossing with brown or red-tinted forms, which generally results in suppressing the violet. The one labelled No. 1 is specially rich in colour. No. 2 is between O. Lambeauianum Mars and O. crispum Thompsonianum (which makes it a form of O. Aireworth), a finely shaped flower mainly of violet colour, the white ground showing only at the margins and in a few places between the large, confluent, violet blotches. No. 3 is a cross with O. loochristiense (harvengtense), and has lost the yellow of that parent, the flower being pure white heavily blotched with purplish-brown.

Flowers of O. excellens Ashworth's variety, a large canary-yellow bloom with some dark red blotches on each segment; O. Gladys, and a fine pure white O. crispum xanthotes are also sent by Mr. Ashworth.

CYPRIPEDIUM STONE-HOUSE.—A flower of this pretty new hybrid between Cypripedium Leeanum Clinkaberryanum (Spicerianum × insigne)

and C. triumphans nitens Sallieri × œnanthum superbum, is sent by H. Worsley, Esq., Sherfin, Baxenden, Lancashire. C. Leeanum Clinkaberryanum influences the form of the dorsal sepal, which is broad and finely shaped, pure white with an emerald green base, from which radiate lines of rose-purple spotting in the medium area. The broad petals are undulated at the margins and bear closely-arranged lines of dark purple spots on a pale greenish ground. The lip, which is larger than that of either of the parents, is reddish-brown, with margin and base of pale yellow. The staminode in form reverts to the original species in its ancestry, and is a compound of C. Spicerianum and C. insigne.

ODONTOGLOSSUM CORONA. — The Odontoglossum illustrated in fig. 24 is a hybrid between O. eximium (ardentissimum × crispum) and O. Menier St. Vincent (amabile × gandavense). The plant was shown at the Royal Horticultural Society's meeting on January 29 last, by Messrs. Armstrong and Brown, Orchidhurst, Tunbridge Wells, amongst a number of hybrid Orchids flowering for the first time. The hybrid well demonstrates the advantage of pursuing a definite line in hybridising, the basal species in the parents being O. crispum and O. Pescatorei, with the introduction of rich colour through O. Vuylstekeae in O. Menier. O. Corona excels in size, form and colour any of its parents, the inner parts of the segments being dark claret-red, the margins and tips white, with a slight rose shade obtained from the purple tint of the reverse side. The lip, which is white in front, is marked with ruby-purple at the base.

THE MARKET FRUIT GARDEN.

JANUARY was a month of great fluctuations of temperature. In the first half of it the wind was generally in a cold quarter, and frosts were frequent, while in the second half the weather was mild as a rule, and occasionally quite warm for the time of year. A frost of 17 degrees on the night of the 8th instant raised the question whether it was not the maximum for my station during my seventeen years of residence in my present home. Reference to my first record for sixteen winters previous to the present season, however, showed that it had been exceeded twice, namely, by 20 degrees on the night of February 2, 1912, and by 19 degrees on that of March 4, 1909. These figures refer only to registration at the level of my house, 100 feet above sea level. Greater severity has been twice noticed at a much lower level, namely, 23 and 22 degrees, but there has been no regular record for that position, and possibly the latest severe frost was several degrees greater in the lower than in the higher position. Again, in the matter of rainfall, the danger of assuming that a very heavy one for 24 hours was a "record" was demonstrated by reference to a daily register begun here at the beginning of 1901. For the day and night of January 15 last the measurement was 1.73 inch. This was equalled on December 21, 1909, and exceeded on three occasions, as follows: 3.06 inches on July 23, 1903; 2.28 inches on October 26, 1909; and 2.07 inches on September 30, 1912. But measurements exceeding 1 inch for twenty-four hours have been extremely rare. In the past month rain or melted snow was measurable on 15 days, amounting to 3.77 inches. In the first half of the month snow was more frequent and heavier than usual, but showed no approach to the depth reported in many parts of the country.

DRAINS IN FRUIT PLANTATIONS.

Winter never fails to show that a drain here and there in one or some of my fruit plantations is blocked, so that the pipes affected have to be taken up and cleared. The most frequent cause is the filling of the pipes with the roots of Black Currants or shelter trees. Drains in one field, made before it came into my possession, run under a hedge into a ditch, and some supplementary new ones also. The result is frequent blocking by the roots of hedge shrubs or the shelter trees which I planted some years ago. Black Poplar and Cupressus. The former is a bad offender, and we have found its roots running up into the field to a distance of eight or ten yards. The roots of Black Currants will block drains lying at a depth of 3 feet. Apple roots occasionally get into the pipes, but rarely block them entirely. It is a great mistake, in draining land, to lead a number of single rows of pipes into separate outlets in a ditch, whether they have to go under a hedge or not. The two or three pipes close to the place of outlet for the water in them are almost certain to drop, through the loosening of the earth around them, and then there may be partial blocking. Or the outlet may be blocked by earth scraped over it by mice, rats, or rabbits. The better way is to lead the single drains into a main drain, or more than one if the lie of the land renders it more necessary. Then the outlet or outlets can be bricked up or cemented. But, apart from such causes of blocking as are referred to above, drain pipes, in course of time, get gradually filled with silt. This is particularly the case where the silt is heavy, as it is where there is much iron in the soil. At the present time I am draining a recently purchased field, the subsoil of which contains more or less ironstone in places, which is not astonishing, as the district was an important iron-smelting one in the distant past, before the industry was monopolised by the coal districts. About thirty years ago this field was drained in good style, the single drains being led into a 6-inch main. This I knew nothing of when I began to lay a main, hitting upon precisely the same position for it. As soon as the work was begun the outlet of the old main was discovered, water still issuing feebly from it. We then followed the old main, taking up the pipes and clearing out of them the silt, permeated with iron oxide, with which they were partially or wholly filled. Fortunately there is a spring, which runs all the year round, in a ditch at the side of the field at which the main starts, and this has been led into that end of the main, in order that the pipes may be constantly washed by a stream of water. Similarly the single drains led into the main were found more or less full, and a 4-inch and a 3-inch drain were followed and cleared, while 2-inch drains are being left as they are, as it is easier, if not cheaper, to lay fresh drains than to follow the old ones, clear them, and re-lay them. The same difficulty with iron silt has been experienced in two other fields drained in earlier years.

PREMATURE HATCHING OF INSECTS.

The finding of a Mottled Umber caterpillar, about half grown, on an Apple tree on January 25, reminds one of the desirability of an occasional warm spell in winter, to be followed by somewhat severe frost. That stem-mother aphides are often hatched prematurely is well known, and their destruction shortly afterwards by frost is of more advantage than almost any amount of spraying. Possibly the extraordinary immunity from aphis attack last season was due to premature hatching followed by frost. That this was the case in one of my plantations of young Apple trees is certain, as a number of badly infested trees were quite cleared of Aphis avenæ (or Fitchii, as formerly called) by a frost of only 2 degrees. I have no evidence of the destruction of Apple suckers or caterpillars by frost, but possibly fruit growers in districts more subject to late frosts than my own is may have such evidence.

FIG. 24.—ODONTOGLOSSUM CORONA.

APPLE STOCKS.

Remarks concerning the Doucin as an Apple stock in the Report of experiments under the auspices of the Wye Agricultural College at East Malling, Kent, to the effect that it grows as freely as the Free stock, are strikingly confirmed by the growth of trees in my orchards grafted on Doucin, Crab, and Free stocks respectively. Nearly all the trees in three of my Apple orchards were grafted or budded on my own farm, and it is only to these that I am about to refer, because, of course, I have no certain evidence of the trueness of stocks in cases of purchased trees. The Doucin, Crab, and Free

stocks used were remarkably good ones, and, it may be said, equally good. Now, in two orchards there are several varieties of Apples raised partly on all three stocks, and in one other orchard Doucin and Crab can be compared. On several occasions I have inspected these trees, in order to note any differences in growth from the different stocks, and on each occasion my note was "No difference." This means no difference, so far as I could see, in average sizes of trees in rows or parts of rows of the three or two stocks. The only distinction noticed has been more marked lack of uniformity of size in trees on the Free stock than in trees worked on the other stocks. This is not surprising, because Free stocks are generally, if not always, raised from the pips of mixed varieties of Apples from cider mills. Perhaps the most remarkable lack of difference in growth is found in two orchards in which trees grafted on stocks supplied to me as Broad-leaf English Paradise are as big as trees grafted on Doucin stocks side by side with them. But it is possible that the stocks supplied to me as English Paradise were Doucin stocks, as it is reported that some nurserymen send out the latter under the name of the former. In all the cases referred to the trees have been planted from eight to eleven years.

No Sugar for Home-made Jam.

The announcement that there is no prospect of sugar being available for home-made jam is one of alarming purport to fruit-growers. Householders are advised to save sugar for jam out of their very meagre weekly allowance, but it is doubtful if many will exercise the necessary self-denial. It is to be hoped that the authorities will find later in the season that they can do better than they expect at present in respect of the sugar supply. Otherwise, in the event of the Plum crop being a good one, it is almost certain that the demand will be so very much below the possible supply that half the crop will not pay for picking and marketing. The demand for several other kinds of fruit will also be affected by shortness of sugar, but that for the Plum crop will be most seriously reduced. Country cottagers, who grow fruit in their gardens, and rely largely upon jam as food for their children, will be seriously inconvenienced if sugar for jam-making should be lacking.

Dearness of Spraying Stuffs.

Another serious difficulty for fruit-growers is the dearness of materials for spraying. A good brand of soft-soap, for which I paid 18s. 9d. per cwt. in 1914, is now quoted at 65s. 8d., which is almost prohibitive for extensive use. Lime-sulphur also has gone up greatly in price—so much that I shall limit my use of it to application to trees subject to scab, unless some should be also required to protect Plum buds against birds. So far as I have observed, lime-sulphur, on trees not subject to scab, has no other effect than that of cleaning them of moss, and for one season this cleaning process may be omitted without serious disadvantage. Arsenate of lead has advanced in price, but not greatly at present.

A Fortunate Scarcity.

Apparently bullfinches were killed off extensively by the severe winter of 1916-17, as hardly one has been seen on my place this season. Up to the end of January no Plum buds appear to have been eaten by birds, and this immunity may be attributed to the extreme scarcity of bullfinches.

Apples Rival and Barnack Beauty.

Being desirous of planting these two varieties of Apples somewhat extensively—if they are free growers and good fruiters, bear fruit of good quality, and are not subject to canker or scab—I should be greatly obliged by statements on these points by readers who have grown the two new varieties for some years. *Southern Grower*

The Week's Work.

THE KITCHEN GARDEN.

By F. Jordan, Gardener to Lieut.-Col. Spender Clay, M.P., Ford Manor, Lingfield, Surrey.

Celery.—The first sowing of Celery should be made at about this date. Choose a quick-maturing variety, not liable to run to seed, such as White Gem or Sandringham White. Sow in gentle heat and do not allow the plants to suffer from drought at the roots or to receive a check from any other cause until growth is completed.

Potatos.—A thorough change of seed is necessary to secure the best results with Potatos, and also much depends upon the care with which the tubers are selected and prepared. For "seed" purposes choose moderate-sized tubers and place them in shallow boxes or trays to sprout. Arrange the trays in a light, airy position in a place that is safe from frost, to encourage the development of strong, healthy sprouts. Examine tubers in store at short intervals after this date.

Horseradish.—To obtain long, straight roots of Horseradish it is necessary to make new beds from time to time. Dig the ground deeply and mix with it a liberal quantity of manure and decayed vegetable refuse. For planting choose straight, moderate-sized pieces of roots with crowns, and take away all side growths. Plant with an ordinary dibber in rows made 12 inches apart and allow a distance of 9 inches between the sets.

Mint and Tarragon.—Lift roots of Mint, place them in boxes, and force them gently in an early vinery or Peach house. Green Tarragon may be treated in a similar manner. The young shoots will soon be ready for use. Give the permanent beds of Tarragon a dressing of leaf-mould or manure from a spent Mushroom-bed.

Vegetable Marrow.—Sow a few seeds of such varieties of Vegetable Marrow as Epicure and Table Dainty in small pots to have plants in readiness for planting out in frames or growing in 12-inch pots for early supplies. The plants should receive no check to growth at any stage; endeavour to keep them strong and sturdy by careful attention to such details as watering and ventilating.

THE ORCHID HOUSES.

By J. Collier, Gardener to Sir Jeremiah Colman, Bart., Gatton Park, Reigate.

Oncidium.—Plants of winter-flowering Oncidiums, such as O. concolor, O. Forbesii, and O. varicosum should be kept on the dry side at the roots after passing out of flower, but give the roots sufficient moisture to keep the pseudo-bulbs plump. The plants will soon commence to grow afresh and any that require re-potting should be given attention as soon as new roots develop from the young growths. These Orchids are best grown in pans of just sufficient size to accommodate them, as the roots need a restricted space. The plants should be suspended from the roof-rafters in a house having a night temperature ranging from 52° to 55°, allowing it to rise to 60° or 62° as the season advances. A suitable rooting medium is a mixture of equal quantities of A1 fibre, half-decayed Oak leaves rubbed through a ½-inch sieve, and chopped Sphagnum-moss, adding sufficient crushed crocks to render the compost porous. Pot moderately firmly, and place the base of the young shoot well down in the compost in order that the new roots may soon grow into it. This minimises the danger of injury from slugs and wood lice, both pests being particularly fond of the young roots of Oncidiums. O. macranthum and O. lamelligerum are sending up their flower-spikes, which should be trained under the roof-glass or around sticks. When the flower-spikes have grown to a reasonable length pinch out the tips; this will make them branch, and the flowers will be finer.

The Cool House.—Odontoglossums, Odontiodas and their hybrids are in all stages of growth, and the greatest care should be exercised to ensure the new pseudo bulbs being well matured. The plants should be placed in full exposure to sunlight, short of subjecting the leaves to injury by scorching. Many of the plants will be near the completion of their season's growth, and about to send up flower-spikes. Great care should be taken to prevent injury by slugs, which are very destructive to the young, succulent flower-spikes. As soon as the inflorescence appears wrap a piece of wadding around the base of the leaf that shields the spike. This, whilst moderately dry, will prevent slugs from creeping up the stems. As the flower-spikes develop secure them to neat sticks, and place the plants on the stages facing the light, to cause the spikes to grow in an arching shape, thus adding to the beauty of the plants when in bloom. In even a small collection of Odontoglossums some of the plants will need repotting at intervals throughout the year. The bulk of the plants are generally repotted in August or September, but any that may require fresh rooting materials and are pushing forth young roots from the base of the current season's growth may be repotted at this period. For a few weeks after root disturbance little direct watering at the roots will be needed, provided the surroundings of the plants are kept moist. Plants of Odontoglossum grande and O. Insleayi leopardinum should still be resting, and will require little or no water until growth becomes active. If these plants are not allowed a long season of rest they will fail to flower in a satisfactory manner. O. citrosmum is on the point of starting into growth, but should be kept dry at the roots until the flower-spikes are seen pushing up through the centres of the young shoots, then the plants should be watered copiously and the atmosphere of the house more charged with moisture.

PLANTS UNDER GLASS.

By E. Harriss, Gardener to Lady Wantage, Lockinge Park, Berkshire.

Violets.—Whenever the weather is suitable, admit plenty of fresh air to Violets growing in frames, as a close atmosphere is conducive to damping. Look over the plants regularly, and remove decaying foliage. Well water the roots when necessary, and if a stimulant is needed sprinkle well-seasoned soot between the plants previous to watering, which should be done early in the day to permit of the foliage becoming dry before nightfall.

The Propagating House.—The propagating house and cases should be cleansed and the walls whitewashed in readiness for the season's work. Get ready the materials for making a hot-bed—Oak or Beech leaves well mixed with stable litter will provide suitable materials for the purpose. The leaves and dung should be thrown into a heap to ferment before placing them in the propagating frame.

Humea elegans.—Plants of Humea elegans will soon be ready for shifting into pots 8 inches in diameter, which are large enough for flowering size. Use plenty of material for drainage; many Humea plants fail through the soil becoming waterlogged. Use a light, open compost and pot firmly. When potted place the plants on a cool base in a light house near the roof-glass. If the roots were watered previous to potting further watering will not be necessary for several days afterwards. Shade the plants from direct sunshine and do not force them into flower by the use of much fire-heat.

Hydrangea hortensis.—Common Hydrangeas should receive attention and be repotted or top-dressed, as is necessary. Old plants should be well thinned of weak, useless shoots, retaining only those which promise to give good trusses of flowers. In repotting make the soil very firm. The compost should consist of a mixture of loam, leaf-mould, well-decayed horse-manure, lime rubble and sharp sand. Plants raised from cuttings rooted last year should be transferred to 5-inch pots. If the wood was well matured when the cuttings were rooted most of the plants should flower in the coming season. A portion

of the batch may be placed in a moderately warm glass-house for early flowering.

EUPHORBIA PULCHERRIMA.—When plants of Poinsettias (Euphorbia pulcherrima) have finished flowering they should be gradually dried off and the pots placed on their sides under the greenhouse stage for a few weeks. After that period they should be brought into a moist, warm house to produce suitable shoots for cuttings. Some of the more promising of the plants which were rooted last year should be selected for growing again next season. The stems should be cut down to within 1 foot of the roots, and when growth is active the balls of roots slightly reduced and repotted in 7-inch pots. These plants should produce three or four flowering shoots, and will be valuable for indoor decorations.

SALVIA SPLENDENS GRANDIFLORA. If cuttings of this Salvia are available a batch may be inserted. Dip the shoots in an insecticide, as red spider may be present on them. The cuttings may be dibbled rather thickly in pans or boxes filled with light, sandy compost. After watering the soil with lukewarm rainwater place the cuttings in a propagating case and keep them shaded from direct sunshine until they have rooted. Salvia Pitcheri may also be propagated now. When well grown this is one of the most beautiful of the autumn-flowering Salvias. The plants must not be coddled at any time, or the growths will become too weak to flower. Insert five or six cuttings in a 5-inch pot and place the latter under a hand-light in a cool house or pit. When well rooted transfer the cuttings to 7-inch pots and grow them in a cold frame, subsequently placing them out-of-doors for the summer.

THE HARDY FRUIT GARDEN.

By JAS. HUDSON, Head Gardener at Gunnersbury House, Acton, W.

THE ALPINE STRAWBERRY.—Having cultivated the Alpine Strawberry for more than twenty years past, I am enabled to write very confidently in its favour as a most useful and highly appreciated addition to dessert fruits. Its use chiefly, in these gardens, has been as a dish for the breakfast table. By far the best method of cultivation is to raise plants each spring from seed. A few packets of seeds should be ordered now, not that there is any hurry to sow the seed, but the matter should not escape notice when the seed order is dispatched. At least four varieties are well worthy of cultivation, viz. Berger, a round, dark-red fruit; Belle de Meaux, a larger fruit and of a darker colour, often as dark as the well-known Waterloo; Rouge Améliore, or Improved Red, a long, tapering fruit of paler colouring; and Large Red Alpine, a fine type of the fruit, of similar shape to Rouge Améliore, and most prolific. My plan is to sow early in April and raise and cultivate the seedlings exactly as in the case of early Celery. In late, or backward districts, the sowing would be better made towards the end of February. The final planting need not be done before September, when a suitable plot of ground happens to be vacant. This is the Quatre Saisons, or Four Seasons Strawberry of the French gardens; it may be had in bearing from the third week in June until the first week in October. To accomplish this my practice is to allow the younger plants to crop for the first time in the autumn; these the following year will be the earliest batch.

ORCHARD TREES ON GRASS. Those who grow fruit trees in grass orchards should extend the circle of bare ground around each tree whilst the latter are still increasing in size. When increasing the circle fork up the soil lightly and remove any suckers or weeds that may be present. Next apply a light dressing of rich manure on the surface and bury it under the surface later by hoeing. The mulch should be applied every second or third year. Do not use animal manure if the trees are making an excessive amount of growth and not fruiting satisfactorily. In the case of dwarf Apple trees on the Paradise stock allow a circle of about 5 feet in diameter. For Pear trees on the Quince the circle should not exceed 4 feet, as a rule. For Plums somewhat less than this area will suffice.

ROOT-PRUNING OF ROBUST GROWING PLUMS.—Plums of the Reine Claude section, and the Transparent Gages, are strong growers, and wall trees may need root-pruning to bring them into a fruiting condition. As these Plums will possibly be occupying walls that have good aspects, the root-pruning needs to be done as soon as possible, and before any early crops are planted in the borders. It should not be done in too drastic a manner. If the trees are recently planted and the strength of the top growth indicates the presence of strong tap-roots, open up the soil and sever the tap-roots without disturbing the other roots more than is necessary. Checking excessive growth in this manner is preferable to hard pruning as the free use of the knife makes the plants susceptible to gumming or canker.

FRUITS UNDER GLASS.

By W. J. GUISE Gardener to Mrs DEMPSTER, Keele Hall, Newcastle, Staffordshire.

APRICOTS.—During the period of setting and stoning of the fruits of Apricots the house should be freely ventilated; the flavour of hot-house Apricots is vastly superior to those grown out-of-doors. Failure to obtain crops on pot trees, and established trees in borders, is generally the result of a close atmosphere, excessive fire-heat, or a lack of moisture at the roots. If the trees suffer from either of these causes the flowers will drop freely. When starting the trees into growth let the night temperature range from 40° to 45°, but the maximum degree must not be exceeded. The exceptional mild weather has hastened the development of the trees, the blossom-buds being on the point of bursting into flower. Up to the present we have used no fire-heat in the Apricot house. During the flowering period the hot-water valves will be opened just sufficiently to maintain a dry, buoyant atmosphere, which is essential to secure a good set. Admit a little air through the top ventilators at night. The flowers should be touched very lightly with a rabbit's tail at midday to pollinate them. When the fruits have set syringe the trees once or twice daily, according to the weather, with tepid water. Trees in pots and borders require abundant supplies of water during the growing season; neglect in this respect will cause the fruits to drop. Trees that are carrying heavy crops should be given liquid manure or other stimulants on frequent occasions. There is still time to plant fruit trees under glass, but the work should be done forthwith. Light, fibrous loam, mixed with mortar rubble or chalk, provides a suitable rooting medium, and sufficient should be used to make the border a good depth; efficient drainage is essential. Newly planted trees should be syringed and watered with extra care until the roots are established.

"MUSCAT" VINERY.—In starting the Muscat vinery let the night temperature be 55°. When the vines have started to grow freely increase the amount of warmth gradually to 70°. The day temperature may be allowed to reach 80° or a few degrees higher by sun-heat, but it is a mistake to exceed 70° by the use of fire-heat. Maintain a close, moist atmosphere to induce the buds to break freely. Always use water at the same temperature of the house when syringing the plants or damping the bare spaces. The house should be syringed and closed early in the day to create a moist atmosphere, and at the same time let there be a slight rise in the temperature. A dry atmosphere is necessary when the vines reach the flowering stage and until the flowers are fertilised. At forenoon, pollinate the flowers with a rabbit's tail or tap the trellis with sufficient force to disperse the pollen. To assist the setting of the fruit, allow the top ventilators to remain open a little at night. After the fruit has set, syringing should be discontinued, so far as the vines are concerned, but all bare spaces should be damped, the borders watered, and the house kept well charged with moisture, or red spider will prove troublesome.

GENERAL REMARKS.—The exceptionally mild weather experienced during the past fortnight has already had its effect on fruit trees under glass. The care bestowed in retarding growth, and the curtailment of forcing generally, appears to have been of little use. In any case a little fire-heat will be necessary at night to protect the opening flowers. Late Peaches and Nectarines are responding to the warm weather by swelling their buds. The tying of the shoots should be completed as soon as possible, or many of the buds may be broken off. Cherries, Plums and Apricots in cold houses are starting into growth, as if in defiance of one's wishes to keep the trees dormant for the present. Economise in fuel by closing the early houses soon after 2 p.m. and thus making the most of sun-heat. There should be no attempt to drive the fires for several hours later.

THE FLOWER GARDEN.

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

LOBELIA.—The store plants of Lobelia compacta should be kept moist by sprinkling them frequently overhead. This treatment will favour the production of aerial roots, which again allows for the rapid propagation of every piece that can be removed for that purpose. When ready the cuttings should be dibbled closely together in ordinary cutting boxes. Stand the cutting boxes on hot-water pipes, where these are convenient for the purpose, and keep the cuttings excluded from the air by sheets of glass or paper. These will produce more cuttings, and in due time will form a thick mass of material, which needs only parting into pieces of a suitable size for planting when that time arrives.

ANTIRRHINUMS.—There is a good deal of labour attached to the raising of Snapdragons from seeds, including pricking off and transplanting. This can be obviated, and the plants still do well, by sowing thinly and afterwards thinning the seedlings to about 1½ inch apart, transferring them directly from the seed boxes to the flowering quarters. The plants should be spaced rather closer than usual, and, previous to planting, their roots be drawn through a mixture of loam and water, sufficiently thick to stick to them. If well treated in the preparatory stage the difference at first apparent will soon pass away.

TRIMMING BOX EDGINGS.—This is one of the uninteresting operations that is likely to be neglected in these pressing times, and it may even be beneficial to allow the plants to grow for a year untrimmed, following a season of drought or great heat, but as a rule it pays to trim them every year, and where the Box marks off flower-beds it is, of course, even more important that it should be cut than where it edges borders in the kitchen garden. Weather that put a stop to other work has permitted the clipping of Ivy, and now a similar opportunity is waiting to lightly trim all Box edgings. In these gardens they are all square-topped, and require to be carefully cut. Where the edgings are kept low and merely serve as dividing lines they are very expeditiously cut with a scythe. It may be noted that rough edgings when cut at this time of year are apt to get scared by frost, but it is seldom that this happens if the growth is slight, as it is when annually cut.

PRUNING DECIDUOUS PLANTS.—Young standards of such plants as Laburnum need to be cut back for the first few years after attaining the desired height of stem in order to obtain a stout, well-furnished head. Older plants should also be examined, and shoots that are seen to be of no advantage cut out. Some shrubs give more trouble than others—certain Crataegus require almost annual overhauling to keep them duly thinned. But all may be induced by careful pruning, which means the removal of weakly growth as a rule, to make rapid growth, and to form handsomer specimens than if left to nature.

MULCHING.—A mulching of cow-dung, placed over the roots of any plants that are in an unsatisfactory condition, is a valuable aid to growth. Rhododendrons, Azaleas, Picea nobilis, Ilex maderensis, Sciadopitys verticillata, and Quercus glauca are a few which respond very remarkably to this treatment. In the dressed grounds it is important to withdraw a portion of soil from above the roots, then to apply the mulch, which is covered with the soil formerly withdrawn.

EDITORIAL NOTICE.

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

Special Notice to Correspondents. — *The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.*

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

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.*

APPOINTMENT FOR THE ENSUING WEEK.

TUESDAY, FEBRUARY 12—
Roy. Hort. Soc.'s Coms. meet.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 39.0.

ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, *Thursday*, February 7, 10 a.m.; Bar. 29.9; temp. 50.3°. Weather—Dull.

Trees and Soil Sterility.

The well-known and much-debated fact that the soil beneath trees generally exerts an adverse effect on plant growth has been investigated recently,* with interesting results, by Mr. J. N. Sen.

The fact itself bears two aspects—one, that the shading, the drying, or other effect of the growing tree may interfere seriously with the growth of any other plant within the range of its shadow. The other aspect is more important, namely, that the tree as a result of its own growth sets up conditions in the soil which are adverse to plant growth: that the tree actually sterilises the soil.

Again, this sterilisation—if it occur—might be due to one of two causes. Either the roots of the tree rob the soil of so much mineral plant food as to impair its fertility; or the roots might excrete a poisonous substance (toxin), the presence of which in the soil hinders germination and growth.

The former view has often been put forward, but has never been verified experimentally. The latter view, as our readers are aware, has recently been promulgated by Mr. Spencer Pickering as the result of his experiments on the effect of one plant on another (see *Gard. Chron.*, Oct. 27, 1917, p. 170). To those familiar with the general facts of plant life, there is nothing à priori improbable in the toxin hypothesis. Among fungi, for example, it is common enough for the plant to excrete a poison sufficiently strong to kill the host plant. It was shown long ago that the parasitic fungus Botrytis cinerea, so destructive of Tulips and other plants, sets to work in this way, secreting oxalic acid, and thereby poisoning the tissues, through which it subsequently spreads.

At the same time there are difficulties in the way of accepting the toxin hypothesis in the case of the supposed sterility of the soil beneath trees, and in any case the first thing to do is to ascertain whether the soil owes its effect only to poverty or to the presence in it of some actively poisonous substance.

This Mr. Sen has done, and has found that the soil taken from beneath the trees (Tamarind) which he chose produced a strikingly inimical effect on the growth of seeds (Maize) planted therein. After two months the Maize seedlings in the "Tamarind" soil were poorly grown and sickly, whereas those sown at the same time in soil taken from neighbouring grass land were vigorous. Observations made in the open confirm the conclusion that, where vigorous tree-like growth has occurred, there the soil is barren. For example, a row of Bamboos was cut down and the soil brought under cultivation, with the result that where the Bamboos had been there growth was poor. Chemical analysis of the soil enabled Mr. Sen to throw new light upon these phenomena, for they showed that the soil taken from beneath the Tamarind tree contained an *excess of soluble salts such as sodium sulphate*, known to exercise a harmful effect on plant growth. The analyses also showed that the excess of salts was greatest in the surface layers of the soil, and decreased towards the deeper layers. Having established this interesting fact, Mr. Sen proceeded to offer suggestions as to how the accumulation of soluble noxious salts is brought about. He puts forward the view that the movement of such salts is related with the water-movement in the soil. The tree in its growth absorbs large quantities of water, and hence the soil in the neighbourhood of the roots is drier than that more distant. A movement of water tending to redress the balance takes place and the soluble salts are carried dissolved in the water, the water is taken in by the roots, and the soluble salts are left. It is possible, moreover, that the excess of soluble harmful salts is increased by the bleaching out of these substances from the fallen leaves and other débris; but of the two the water-movement already described appears to be the more important agent in effecting the accumulation of salts.

It is not easy to see how this simple explanation can apply to the case of grass and trees investigated by Mr. Spencer Pickering, and recently described in these columns; nevertheless, the possibility that Mr. Sen's observations provide the clue to Mr. Spencer Pickering's results must not be ignored.

* *Agric. Journ. of India*, July, 1917, reported in *Agric. News*, Barbados, Nov. 3, 1917.

THE SURVEYORS' INSTITUTION.—The next ordinary general meeting of the Surveyors' Institution will be held in the Lecture Hall of the Institution on Monday, the 25th inst., when a paper, on "The Effect of Taxation on the Development of Mineral Estates," will be read by Captain (late Professor) DAVID BOWEN, R.E. The chair will be taken at 5 o'clock.

CLASSIFICATION OF THE PRIMULAS OF THE PETIOLARIS-SONCHIFOLIA SECTION.—Mr. W. G. CRAIB is known in the Primula world as a keen student of the genus Primula, and especially of the section typified in his classification by P. petiolaris and P. sonchifolia. He has now published a further contribution to the subject in *Notes from the Royal Botanic Garden, Edinburgh*, January, 1917, pp. 249-277, based on the Calcutta, Edinburgh, and Kew Herbarium specimens. Eleven species are described as new, and the section as it now stands comprises 25 species. The enumeration is preceded by an historical sketch, by a discussion of the grouping according to affinities, and by a key to the species. The key is based primarily on characters offered by the leaves, supplemented by modifications of the flowers, their calyx, and their corolla. Synonymy and geography are given in the enumeration, as well as altitudes. Practically all the species occur at elevations of 10,000 feet and upwards, and no fewer than 15 are recorded from 12,000 to 15,000 feet, while the greatest elevation given is 5,000 metres—about 16,400 feet. This section of Primula is wholly Indo-Chinese.

PLANTS OF COLOMBIA.—Mr. H. PITTIER'S sixth contribution on "New or Noteworthy Plants from Colombia and Central America" includes a number of Moraceae—two species of Coussapoa, and four of Cecropia. Of Roupala, the northernmost type of the Proteaceae in the New World, three new species are described. Roupala extends as far north as Mexico. It is closely allied to the Australian and Asiatic genus Helicia, which reaches temperate regions in Eastern Asia. Among other novelties are several species of arborescent Caesalpiniae; nearly a dozen species of Combretum, and half a dozen of Cordia and as many of Bignoniaceae.

AMERICAN ANEMONES.—In *Rhodora* for 1917, Mr. M. L. FERNALD describes some colour "forms" of American Anemones. Anemone riparia, a species closely allied to A. virginiana, presents three variations, namely: the ordinary white condition; rhodantha, with red flowers, and inconspicua, with thick, leathery, greenish or greenish-white sepals. A. virginiana has usually greenish-yellow flowers, and the variety leucosepala, white flowers. A. multifida offers several variations, both in colour and number of sepals. A. m. sanguinea bears flowers of a bright red, whilst those of A. m. lencantha are of a pure white. The usual number of sepals is five, but in the variety polysepala they are 14-16 in number, and bright red in colour. These are all relatively small-flowered species.

VITIS NOVAE-ANGLIAE.—Vitis novae-angliae is the name given by Mr. FERNALD to a New England vine, which has hitherto been regarded as a hybrid between Vitis Labrusca and V. vulpina. Although this vine is in many ways intermediate between the two species named, the author gives good reasons for raising it to specific rank.

THE GENUS ATHYRIUM.—*Rhodora* for September, 1917, contains an interesting article by F. K. BUTTERS on the genus Athyrium and the North American Ferns allied to A. Filix-foemina. It is illustrated by figures in the text, and the species of Athyrium described and discussed are A. asplenioides and A. angustum, with numerous varieties of the latter.

BASKET-MAKING BY SOLDIERS.—A scheme for the training of disabled soldiers in basket-making has been organised jointly by the Ministry of Pensions, the Ministry of Labour, and the Food Production Department. The financial arrangements are in the hands of the Ministry of Pensions, which will defray the cost of training and the capital expenditure involved in the workshops. The Food Production Department will supply an organiser for the scheme,

sel... and treat with the ... al War Pensions Committees and gene...lly assist in bringing together the tru...al wors... who are suffering from a shortage of baskets, and the basket works.

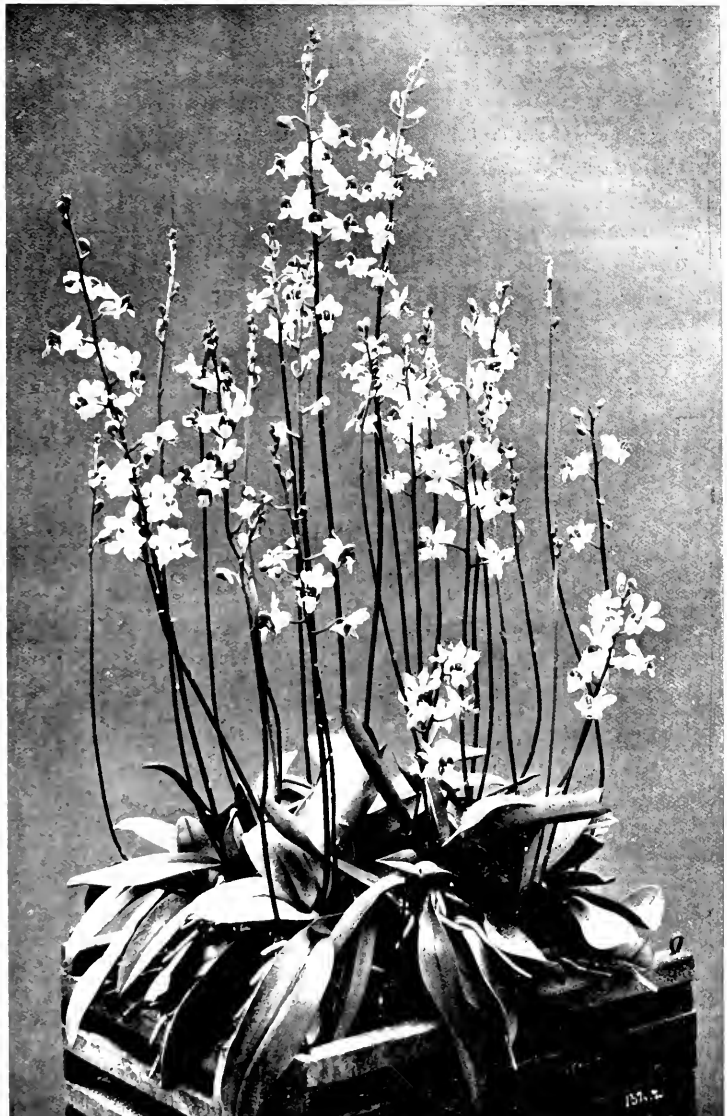
CLUB FOR WOMEN LANDWORKERS.—A clubhouse for members of the Women's Farm and Garden Union and the Women's National Land Service Corps has been opened at 51, Upper Baker Street, in a house adjoining the offices for both societies. Bedrooms are available for the use of country members.

WAR ITEMS.—2nd Lieutenant HUGH COLVIN, of the Cheshire Regiment, has lately received the V.C. for conspicuous bravery in the field, and has received a hearty welcome at Chester, which he visited on his return home. Mr. COLVIN'S father is head gardener at Rose Bank, West Didsbury, and his son entered the gardening profession at an early age, being employed as an apprentice by Lady STOREY in her gardens near Lancaster. Later, however, he lived in Belfast, and enlisted there in 1906 in the 8th Royal Irish Hussars. He served for six years in India, and went to France in December, 1914, obtaining his commission in April, 1917.

—— Pte. C. PASCOE, late inside foreman at the Friary Gardens, Old Windsor, was awarded the D.C.M. for gallantry in bringing in wounded on September 2, 1917, from the front line under fire. Pte. PASCOE joined the Royal Berks in January, 1916, afterwards being transferred to the 17th Manchester Regiment as stretcher-bearer. Twelve men from the Friary gardens are serving in France and Siberia. One has been killed and several wounded.

THE FERTILISING RAIN. The philosophy of TOLSTOY'S remark that "the property of rain is to wet," does not, according to the most recent investigations,* suffice to explain the beneficent action of showers on the growth of plants. Long ago it was suggested that rain was an important purveyor of nitrogen to the soil, but measurements show that the amount of combined nitrogen brought down by rain is almost negligible—a mere 4 or 5 pounds per acre per annum. Recent experiments indicate that the favourable influence exercised on crops by rain is to be ascribed not only to the moistening but also to the aeration of the soil. For rain is a saturated solution of oxygen. In support of this view it is found by RUSSELL and APPLEYARD that when the course of the bio-chemical activities of the soil is followed they do not run exactly parallel with the fluctuations of moisture-content as might have been expected. But when a comparison is made between the changes in the rate of bio-chemical activity on the one hand and the rainfall on the other a closer agreement is observed. It therefore seems probable that the hastening of soil decomposition with the resultant liberation of plant food, and the more vigorous growth of roots are to be ascribed only in part to the water of the rain, and the other virtue of the rain lies in the fact of wetting it is to air. Oxygen brought in solution to the roots is undoubtedly oxidizing, root action is stimulated, and the plant flourishes more vigorously. Mr. WATSON may find herein a clue to the cause of deterioration of greenhouse soils to which he refers on p. 52.

THE GENUS MAHONIA IN THE OLD WORLD.—To the January 1917 number of the *Edinburgh Notes*, Dr. H. TAKEDA contributes a synopsis of the Old World species of Mahonia, as distinguished from Berberis. There is a large number of previously undescribed Chinese species. Ten species are recorded from India, whereof seven are here first defined; but several of these have been raised from varietal to specific rank. Including five species not seen by this author, 25 species are now known to inhabit China; two-thirds of these have been published since the appearance of FORBES and HEMSLEY'S *Enumeration of Chinese Plants*, and Dr. TAKEDA makes considerable emendations in the synonymy of previous writers on the genus. The first record of these species was made by ROBERT FORTUNE, who discovered M. Fortunei and M. Bealei; the former was published by LINDLEY in 1846, and the latter by FORTUNE himself in the *Gardeners' Chronicle* of April 12, 1851, p. 212, both under Berberis. In addition to the Indian and Chinese species there are three or four in Formosa, and one each in Malacca, Annam, Siam, Java, Burma, and the Philippine Islands; in most cases the species are endemic. It will come as a surprise to many readers that no species is a native of Japan. M. japonica and M. Bealei are both cultivated in that country, as well as in this; but these very distinct plants have been much confused in literature and cultivation. The author states that "these two species may show some resemblance in foliage under abnormal circumstances, yet an absolute distinction can always be seen in the inflorescences. While M. Bealei



[Photograph by F. J. Wallis.

FIG. 25.—BORITIS PULCHERRIMA: COLOUR OF FLOWERS VARIES FROM PURE WHITE TO CRIMSON. (See p. 58.)

has racemes rather straight, stout, and densely beset with small bracts; those of M. japonica are rather slender, straggling, and loosely furnished with large ovate bracts; and the flowers of these two species are totally different." Dr. TAKEDA'S excellent paper is to be illustrated by 37 plates, but the plates were not ready for issue with the letterpress.

* Russell and Appleyard, *Journ. Agric. Sci.*, III., Pt. 3, p. 285.

THE CANNING OF FRUIT AND VEGETABLES IN AMERICA.—The active propaganda carried on in America to increase the canning of fruit and vegetables has, according to *Gardening*,* proved remarkably successful, and as a result our contemporary states that there are "one billion cans of home-canned fruit and vegetables on the pantry shelves of American houses." It adds with justice, and in view of the need for preserving food, that they are the most important collection of cans the world has ever seen.

LOCAL SOCIETIES.—The eighteenth annual meeting of the Croydon Horticultural Society was held on January 15, Mr. A. ALDERMAN in the chair. A report of the year's work was read by the secretary, including the financial statement, which showed that the Society held a credit balance of over £50. The president (the Mayor of Croydon), the chairman, Mr. A. ALDERMAN, and the other officials of the Society were re-elected.

—— The Lewisham Horticultural Society's annual meeting was held on January 21. It was reported that the membership is 1,100, and the members hold 81 acres in allotments. The financial statement showed a cash balance of £266. Mr. H. J. JONES, the chairman, was re-elected, and Mr. W. PAYNE was appointed secretary, in place of Mr. WEBBER, who resigned.

—— The ninth annual meeting of the Watford Horticultural Society took place on January 23, the Rev. W. HARTLEY PARKER in the chair. The report of the year's work was read, and the financial balance was stated to be nearly £20. The Earl of CLARENDON was re-elected president, Mr. F. J. McLEES was again appointed hon. secretary, and the other officials were duly elected.

—— The annual report of the Chester Paxton Society has been received, and gives an account of much useful local work. The Society has given assistance to allotment-holders, including the publication of a helpful pamphlet on the growing of vegetables, and the donation of a number of prizes and cultural certificates for the best allotments.

PUBLICATIONS RECEIVED.—***The Seed Trade Buyer's Guide.*** *(The Seed World,* Chicago, Ill.) Price $1.00.—***Experiments with Potatos at R.H.S. Gardens, Wisley, 1917.*** Reprinted from the *Journal of the R.H.S.*, Vol. XLIII. (London: Spottiswoode, Ballantyne & Co., Ltd.)

DORITIS PULCHERRIMA.

THE story of this pretty little Orchid (see fig. 25) was recently told in the *Orchid Review* by Mr. Rolfe. The plant has been grown in quantity at Kew for years, as the result of a cheap lot of imported plants purchased in Messrs. Protheroe and Morris's Auction Rooms. It was formerly called Phalaenopsis Esmeralda by Reichenbach, who ought to have known better, for it is not in the least like a Phalaenopsis. He described it in 1874 as a lovely gem with spikes of amethyst-coloured blossoms, which had been introduced from Cochin China by M. Godefroy Leboeuf, who found it growing on isolated rocks in the midst of a small thicket of Conifers, never on trees. The plant is very easy to cultivate, so easy that it might be used as a bedding plant if it would stand our summer climate. Free flowering, with spikes erect, the flowers keep fresh for weeks, whilst the plant never gets out of condition. The flowers vary in colour from crimson to lilac and almost pure white. These colour variations deceived Reichenbach, who named one of them Phalaenopsis antennifera, another P. Regnieriana, and a third P. Buyssoniana. W. W.

* *Gardening*, Jan. 1, 1918.

ON INCREASED FOOD PRODUCTION.

THE VALUE OF RABBITS.

AT the present time, when flesh food is dear and scarce, no garden of half an acre or more should be without a few rabbits, even if other stock is kept, for rabbits will eat quantities of stuff which no other stock will eat. They outclass pigs altogether for consuming garden refuse. They will eat almost anything herbaceous, including the stalks of Brassica plants and Jerusalem Artichokes, fruit-tree prunings, fence clippings, and much of the dry garden litter which is usually collected for bedding. Apart from the flesh food produced, the value of the manure obtained is worth consideration.

No special variety need be kept. Perhaps a Dutch doe crossed is as good as any for the purpose. One doe will often be sufficient, but if two are kept they should be timed to kindle about the same time, so that the young can be run and dealt with together. Alternate lots of young may be sold early if space and food are not available. A buck need not be kept, as it can easily be borrowed, and the young bucks should be killed when half grown if space is not available for their separation. The doe should be kept in any large, plain box, with a wire door in front. The young, when six weeks old, should be run on a large floor, such as that of a tool house or old carriage house, where they can get exercise and be easily fed with garden refuse.

They eat a surprising quantity of green food, and therefore it is important that a number should not be kept in excess of the food available. There is most garden refuse in the autumn. For convenience, when there is no garden refuse, a small plot of Chicory, Lucerne, or Thousand-headed Kale should be grown. Very little bought food should be afforded at present prices. A little bran and linseed or other cake may be given dry to counteract effects of much green food. *T. T. Taylor.*

ONIONS.

No vegetable crop is more remunerative than a well-cultivated plot of Onions. Rich soil and deep cultivation are necessary to grow good bulbs, and it has been proved that the best results are obtained, and especially in districts where the ground is cold and heavy, by sowing the seeds thinly in boxes of finely-sifted, rich soil about the first week in February. It is often a difficult matter to get the soil in the open in a suitable condition for a seed-bed before the season is too far advanced, whilst seeds sown in cold, damp ground are a long time before they germinate, and give only weak plants. The seeds should not be germinated in a high temperature, and the seedlings should be ready for transplanting early in April.

In favourable districts the main crop of Onions should be sown as early in March as the condition of the soil permits, and although the ground may have been trenched in the autumn, very careful preparation of the soil is necessary. The work should be done at the first favourable opportunity by forking the surface of the bed and breaking the soil as fine as possible. When the time for sowing arrives, and the ground is dry enough to crumble under the foot, the bed should be carefully trodden and raked evenly on the surface before the drills are drawn. The drills cannot be too shallow, provided the soil is fine enough to cover the seeds. When the soil is not thoroughly pulverised it is a difficult matter to draw the drills as evenly as is necessary, and many of the seeds being buried too deeply produce plants that give thick-necked Onions. When the seeds have been sown and covered with the soil, press the rake carefully and lightly over the surface, which should afterwards be rolled. If the seeds are sown sparingly very little thinning will be necessary if the bulbs are intended for ordinary use, but if large bulbs are desired the plants in a portion of the bed should be thinned to 6 or 8 inches apart. As soon as the plants are well through the ground hoe the surface lightly in order to destroy small weeds, but do not hoe deeply, as the soundest and best-shaped bulbs grow on a firm surface. Frequent dustings of soot and lime will do much to promote healthy growth and keep the Onion maggot in check.

If suitable varieties are selected sound bulbs may be harvested in July from plants raised in the previous autumn. We have a quantity of bulbs of the variety Long Keeper still in good condition from plants sown in August, 1916, and harvested in the following July. Wroxton Globe is another good Onion for autumn sowing. Transplant the autumn-raised seedlings in rich soil as soon as the ground is dry enough in spring. The ground for autumn-sown Onions should be prepared in the same manner as for spring Onions. *J. Dunn.*

CORN INSTEAD OF RHUBARB.

MAJOR DENT, Chairman of the West Riding Executive Committee, recently convoked a conference of the Rhubarb growers in the Leeds district to consider what portion, if any, of their market gardens could advantageously be ploughed this spring for the production of corn crops. About 3,000 acres around Leeds are devoted to Rhubarb growing, and in the past two years the disposal of the produce has presented some difficulty owing to the lack of transport, the high price of fuel and labour, and the shortage of sugar. It was suggested that 1,000 acres could be spared for the growing of more essential food crops this year; and the conference passed a resolution "that in the national interest the 1914 area of Rhubarb land should be reduced by one-third in 1918." A committee of five growers is now engaged on an inspection of the ground with a view to the ploughing of the oldest and least healthy portions of the stools. It is hoped to devote 2,000 more acres this year than last within the County Borough of Leeds to the growing of necessary food crops.

TOMATOS.

A SOWING of Tomato seed should be made now, and the seed germinated in a house where the temperature is kept steadily at 55°. There are many things to guard against in Tomato growing at this season. Do not pot the plants in a cold shed. A temporary potting bench should be erected in the Tomato house itself to prevent the plants receiving checks through a sudden lowering of the temperature by the frequent opening of doors. The use of cold, wet soil for potting is harmful, and other points to observe are not to pot the seedlings too firmly, and to use warm water for watering. For seedlings thumb-pots are large enough. The compost should consist of leaf-mould and coarse sand, and should be warmed before it is used. Place the plants in the soil up to the seed-leaves, and grow them near the roof-glass. Later the plants should be shifted into 3-inch or 6-inch pots, adding fibrous loam to the compost, and making the soil firmer than at the first potting. Place a neat stake to each plant. Water the roots very carefully, and ventilate the house when the weather is favourable. For the final potting I use 10-inch pots, and for soil equal parts of loam, coarse sand, or mortar rubble and old Mushroom-bed manure. Do not damp the floor and staging to excess, as a saturated atmosphere is harmful. Ventilate freely, but not to such an extent as to cause a sudden fall in the temperature. When a number of trusses are set give the roots stimulants freely. Nothing is gained by leaving the fruits on the plants to ripen; when turning colour they should be gathered and placed in a warm, dry place to complete their ripening. *C. Davis, Holy Wells Park Gardens, Ipswich.*

ARTIFICIALS FOR ALLOTMENTS.

ALLOTMENT holders who require artificial manure and have difficulty in obtaining supplies

locally should communicate at once with one of the agents recognised by the County Agricultural Executive Committees and the Food Production Department for the sale of artificial fertilisers. Lists of agents for each county may be obtained on application to the County Agricultural Executive Committee, or to the Food Production Department, 72, Victoria Street, London, S.W. 1.

In order to obtain the most favourable terms allotment holders should combine to place large orders. The advantage of doing so may be illustrated by the prices which have been fixed for sulphate of ammonia when purchased between January and May of this year: For 2 cwt. and less than 1 ton, 18s. per cwt.; for 1 cwt. and less than 2 cwt., 19s. per cwt.; for quantities not less than 28 lbs. and less than 1 cwt., 21s. per cwt. Prices for superphosphate and basic slag may be obtained from the agents.

VEGETABLES AT KEW.

DURING 1917 vegetables were grown in considerable quantities in the nurseries at Kew Gardens, and some of the flower beds were planted with vegetables having more or less ornamental foliage, such as Beet, Kohl Rabi, Carrot, Chinese Cabbage, Couve Tronchuda (Portugal Cabbage), and Kales. In the coming season an increased area will be cropped with vegetables. The illustration in fig. 26 shows the ploughing up of the large open lawns in front of Kew Palace, which it is proposed to plant with Potato British Queen. Women gardeners have cleared the Violas, Iberises, Phloxes, and other spring flowers from the beds in front of the Palm House, and are trenching the ground preparatory to planting Onions, the young plants for the purpose having been raised under glass. This portion of the flower garden is about half an acre in extent. Still more of the nursery beds devoted in pre-war days to the growing of Tulip and Daffodil bulbs, Polyanthus, Aubrietia, Iberis, and the hundred and one things required to furnish the flower garden, beds, and borders, have recently been cleared to grow larger supplies than last year of Parsnips, Carrots, Leeks, Turnips, Cauliflowers, Cabbages and Potatos. Two large beds planted last autumn with Cabbage Harbinger look very promising.

The outbreak of the war has impeded the development of the new Pathological Department, and a considerable portion of the ground set aside for experimental purposes is in the meantime let in 20, 10, and 5 rod allotments to the garden employees.

FOOD EXHIBITION AT THE INSTITUTE OF HYGIENE.

AN exhibition to encourage food production was held in the Institute of Hygiene, 34, Devonshire Street, London, W., during the week ending February 2. Vegetable foods formed a large part of the exhibition, and there were shown nutritious dishes made from Nuts, uncommon cereals, Pine kernels, and Beans. Experts gave demonstrations in the preserving of fruits and vegetables by bottling and drying, and methods of cooking.

The Royal Horticultural Society showed a series of lantern slides illustrating vegetable and fruit production and soil management, garden tools, seed testing, Potato storage, greening and sprouting of seed Potatos, fertilisers, the Wisley Turnip Flea beetle trap, and a large series of Haricot Beans grown at Wisley.

FIG. 26. PLOUGHING THE PALACE LAWN AT KEW FOR CROPPING WITH POTATOS. *[Photograph by E. J. Wallis.*

HARICOT BEANS.

I HAVE threshed the remainder of the Beans I grew last season for use as Haricots (see *Gard. Chron.*, Dec. 1, 1917, p. 216). I have another variety, The Princess of Wales, a French climber, that may be recommended both for quality and cropping. In fact, the quality, when cooked as a Haricot, is not inferior to that of the Dutch Brown.

Last season, when planting late Potatos, the space of one Potato row was missed in the centre of the plot. This area was marked at each end by a peg, and about the second week in May and before the Potatos were through the soil, a pint of seed of Princess of Wales Bean was sown therein. The Bean sticks were placed in position immediately and the seeds were covered with soil, thus obviating trampling between the Potato rows afterwards. The Bean row and Potato rows ran north and south, and when the Beans were fully grown they cast but little shade on the Potatos. The growth of this French climber is not so strong as the ordinary Scarlet Runner, and Pea sticks were suitable as supports. The row of Beans was 26 yards long, and the plants gave 25 pints of excellent Beans.

There seems one slight disadvantage with this French climber, in that it requires sticks for support; but the pods ripen on the sticks, whereas a drying-shed is required to ripen the dwarf kinds.

I am unable to say what the average weight of tubers would have been from a row of Potatos 26 yards long, but I think the 25 pints of Beans would represent more in food value than the produce of the row of Potatos, and there is not the least doubt but that this simple method of growing Haricot Beans amongst late Potatos would well repay cottagers and allotment holders.

The following is a recipe for cooking Haricot Beans: The day previous to cooking, place the required quantity of Beans in a basin; sprinkle them with a small amount of bicarbonate of soda, and then fill the basin with boiling water; cover with a plate and leave to soak for about 16 hours. Just before they are cooked rinse the Beans with cold water. When the Beans are in the saucepan cover with cold water and simmer for 1½ hour. As evaporation takes place add boiling water at intervals. A little bacon rind cooked with the Beans improves their flavour. *G. H. H. W.*

GROUND OPERATIONS.

IN reply to Mr. Bartlett (p. 18), my belief is that digging light ground four or five months before the time for planting or sowing might cause it to lose much of the humus and other plant foods present, as well as destroy beneficial bacteria, and favour the increase of harmful ones. I, too, use old manure—six to twelve months old—at planting time. Gardeners are "opportunists"; it is not wise to be dogmatic in all operations, nor wise to have all our eggs in one basket. What may seem a contradiction may be only a difference of conditions.

Mr Beckett is quite correct, as he has studied his kind of soil, and found out by experience the best way of dealing with it. One great point in Mr Beckett's favour is that clay soil freshly dug keeps wet longer, and is colder in the spring, with the result that bacteria are later in starting their good work. *Japonica.*

HOME CORRESPONDENCE.

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

WALL FRUIT TREES (see p. 45). In his remarks on cordon fruit trees, *A. C.* states: "No cordon Pear or Apple tree needs more than a barrowful of soil," and yet they should be "planted 3 or 4 feet apart. It is not wise to plant them closer, as, where very close planting occurs, the roots interfere with each other." Supposing we place the trees at his minimum distance, 3 feet, allowing the soil to be 2 feet deep and 3 feet wide, we have 18 cubic feet of soil, which it would take a rather large barrow to hold. The lower spurs are to spread 6 to 9 inches on either side of the stem, and "shorter, lighter, and further apart as they ascend; the sap will be evenly apportioned, and every part of the tree bear fruits of even size and quality." If the stems are given an inclination of 45° it is difficult to understand how the sap will be evenly apportioned on the two sides of the stem. "No tree was ever planted too high; the best examples of high planting are the millions of fine trees on the raised banks of British hedgerows." It is true some fine trees are to be seen in such positions where they are, or have been, fed by the water in the ditches, but still finer specimens are to be found on comparatively level ground in some of our parks. I can point to some which measure 30 to 45 feet in circumference. As to saying that no tree was ever planted too high, there is ample proof, in most of the southern counties, that no fruit tree ever gets half enough water in an ordinary season, or why do they succeed doubly as well when amply supplied with moisture. As to waiting till April, this is one of the worst months to plant deciduous trees. I would not choose August, but would rather plant in that month than in April, and sprinkle whitening and water over the leaves to check transpiration. During such a winter as the present, with the exception of a week or two, planting could be done with more certainty of success than in the spring. *A. C.* rightly says: "A tree does best planted when it may move in the roots and not in the head." This object is best attained when the transplanting takes place immediately after the primary leaves have commenced to change colour in the autumn, supposing no late green growth has been allowed to form. "The stronger a tree, the more it should be inclined from the upright line." Are not strong growing varieties, when well managed, also correspondingly strong at the base? And in planting a border must we leave out the strong growers, which in some cases may happen to be desirable ones, in order to keep to the angle of 45°? If cordons are to be planted, I should prefer not to lean them to the right or left; leaning the top back to the wall is another matter which I will not now discuss, and certainly I would not have half the wall bare, as it must be under *A. C.'s* plan. I also entirely disagree with winter and early spring mulching. *Wm. Taylor.*

CONIFERS AT DROPMORE DAMAGED BY SNOW.—During the past three years the Conifers in these gardens have suffered much damage by unfavourable weather. The gale on March 28, 1916, ruined the beautiful Cedar avenue, last season much damage was done by storms to valuable trees, and now the recent snow has caused extensive damage to many fine specimens. A large tree of Cedrus atlantica in the pinetum is wrecked, and a fine old plant of Abies cephalonica has a huge limb torn off 50 feet in length and 6 feet 10 inches in girth, at the place where it joined the main trunk. In falling the limb stripped a fine Thuya dolabrata of its branches. Pines have suffered somewhat, but no damage has been done to any of the Douglas Firs, their weeping habit enabling them to rid themselves of much of the snow. *Chas. Page, Dropmore Gardens, Maidenhead.*

THE STORING OF APPLES (see pp. 8, 19, 29, 37).—Our fruit store is a large cellar under the house without either a window or ventilation except a slide in the door about 1 foot square, which I never close in the coldest of weather. The door faces due north, and the cellar is quite dark. It has shelves all around and a raised centre on which I keep Pears and dessert Apples. The bottom shelf is about 3 feet from the floor, and is used for storing Potatoes and other roots. Our Apple trees are mostly large specimens. Last year they bore very heavy crops, and the fruit was placed on the shelves more than a foot deep; indeed, some sorts were in layers 2 feet thick. They keep excellently well. We always get a good price for Apples in the spring on account of the firm, sound quality of the fruits. I have exhibited fruits of Annie Elizabeth at our local show on August Bank Holiday the following year after gathering. One of our varieties is named Baglan, but I cannot find the name in any list. It is a splendid Apple for making Apple moulds, the flesh, when cooked, being of a stiff nature. *J. T. Mason, Arden Hill Gardens, Altrincham.*

MEALY BUG ON VINES.—Noticing your remarks on Mealy Bug in the reply to *Constant Reader*, on p. 40 of your issue of January 26, I send you my experience in eradicating the pest. On taking charge of these gardens in January, 1912, I found the vines smothered with Mealy Bug. After pruning the vines the houses were thoroughly washed with Calvert's carbolic soap and boiling water, adding a wineglassful of paraffin to each bucketful. The vines were then scrubbed with very hot water, and afterwards scraped of all loose bark. Sheets of brown paper were laid underneath, and then burnt. The vines were afterwards thoroughly washed twice with Wood's nicotine soap and hot water, and, when dry, painted with a mixture of clay, nicotine, soft soap and sulphur, of the consistency of paint. The walls were given a coating of hot lime with paraffin added. After the vines had started into growth they were examined regularly once a week for Mealy Bug, and any that were detected destroyed with methylated spirit applied by a small paint brush. That season very few bugs were found, but the vines received the same treatment the following season, since when not a trace of Mealy Bug has been found. *J. M. Richards.*

"NOTES FROM A GALLOWAY GARDEN".—I should like to express through your columns the debt of gratitude your numerous readers owe to Sir Herbert Maxwell for his admirable series of "Notes from a Galloway Garden," so appreciative of the real beauty of the many subjects touched upon. There is perhaps no department of gardening of which the average gardener is so deficient in knowledge as that of trees and shrubs, with the result that in many pleasure grounds only the more common varieties of trees and shrubs are to be found. The notes regarding hardy border flowers and their grouping in herbaceous were equally valuable and delightful reading. *T. M. E.*

"DUG-OUTS" IN THE GARDEN (see pp. 24, 57).—Mr. Rowles states that I overlooked the fact that suitable conditions for the storing of fruit might be made. I quite agree this might be done, but the question of expense has deterred me several times from putting a concrete arch to my roof to keep out the drip, which will find its way through more or less, especially after heavy rains. These are not ideal conditions in which to keep either fruit or Potatos. For fruit it would be much cheaper and more satisfactory to build a proper fruit-room. I have grown several acres of field Potatos, and much prefer the old-fashioned pie, or well-made clamp, for the storing of all maincrop Potatos. I am glad this subject has aroused a little interest and discussion, which has brought to light the advantages and disadvantages of these underground stores. I have found my dug-out very useful. *W. Potts, Cirons Gardens, Leatherhead.*

BIRDS AND INSECTS.—To balance the good effect of the scarcity of birds, there is likely to be a plague of caterpillars this spring, judging by the Moths seen lately. Amongst others the Mottled Umber moth (Hybernia defoliaria) has been very plentiful. Although not of such painful interest to fruit-growers as the preceding, I may mention also that I caught four specimens in one night of the striking little "December Moth," which I had always considered rather uncommon until this season, whilst during late October and November that very pretty moth the Feathered Thorn (Himera pennaria), the caterpillar of which feeds on the Oak, was unusually plentiful. *T. E. Tomalin, Bessborough Gardens, Pitlochry, Iceland.*

SOCIETIES.

ROYAL HORTICULTURAL.

Scientific Committee.

JANUARY 29.—*Present:* Messrs. E. A. Bowles (in the chair), J. Fraser, W. C. Worsdell, W. Hales, J. Arkwright, and F. J. Chittenden (hon. sec.).

Potato Reproduction.—Mr. Arkwright showed a Potato of the 1916 crop, which, remaining unplanted, had continued to throw out shoots and produce small tubers. The tubers were successively absorbed and shrivelled as new ones were produced. The formation of young tubers from pith cells inside the old tuber, when the development of shoots is entirely suppressed, was referred to by Mr. Worsdell.

Hybrid Galanthus.—Mr. Bowles showed a number of seedlings raised by Mr. Chapman, of Rye, apparently the result of crossing Galanthus Whittallii with G. Fosteri, and showing characters of both parents in the foliage and to some extent in the flowers.

We give the following extracts from the Report of the Council, which will be presented at the one hundred and fourteenth annual general meeting of the Society, to be held in the Council Room, Vincent Square, at 3 p.m. on Tuesday, February 12, 1918.

THE REPORT OF THE COUNCIL.

In the beginning of the year the Government sought the Society's co-operation in still further organising the country and stirring it up to make an adequate effort to produce all the fruit and vegetables required for home consumption, and the Director-General of Food Production asked the Council to release Dr. Keeble, the director of the Society's gardens at Wisley, to take the head of the Horticultural Section of his Department, under a joint arrangement between that Department and the Society.

R.H.S. PANEL.

At the beginning of the year the Council set up a Panel of Expert Garden-Advisers, and nearly 2,000 names from all parts of the Kingdom are now inscribed upon it.

CONNECTION WITH THE GOVERNMENT.

In the summer a promise of a grant of money was received from the Treasury to assist in defraying the expenditure the Society was incurring on Government Food Production work. This enabled the Council to enlarge its efforts, and a Conference was held at Wisley towards the end of September. The Society's Special Representatives appointed by the Council to deliver lectures throughout the country during the winter 1917-18 were present at this Conference.

FOOD PRODUCTION PUBLICATIONS.

The Society's Food-Production Pamphlets and Leaflets have been of great help to the nation during the year. Since the war broke out approximately 500,000 pamphlets, diaries and leaflets concerning food growing and preserving have been issued by the Society.

REPRESENTATIONS MADE TO THE GOVERNMENT.

Throughout the year the Council have been keenly alive to the interests of horticulture in every direction, and representations have been made to Government Departments on the following matters: (a) Potato prices; (b) the provision of sugar for fruit preserving; (c) the release of tinplate for the making of fruit preserving cans and canning apparatus; (d) the provision of further allotment land and security of its tenure; (e) the preservation of valuable garden stock; (f) the exemption of necessary expert fruit growers from military service; (g) the offer of help in extending the cultivation of school gardens; (h) the importation of bulbs; (i) the carriage of plants; and (j) the need for speedy return of empties.

DUTCH BROWN BEANS.

Mrs. Lubouchere most kindly sent the Society samples of this Bean in 1915, and they were grown in a few private gardens, and also at Wis-

ley in 1916. The trials proved so satisfactory, and the quality as a food Bean so superior to anything of the kind which we had previously grown, that the consent of the Government was secured for a ton of the Beans to be imported last spring. They were widely distributed among the Fellows, and a certain quantity was grown at Wisley, from the produce of which a large stock has been secured. These will be distributed to the Fellows in March next, by the same organisation, and in exactly the same way as the surplus plants and seeds are always distributed.

LECTURES, &c.

The Society hopes to continue its food campaign unremittingly throughout 1918, and would be glad to increase it, if funds and staff permit. In this connection almost all the lectures arranged for 1918 are more or less directly connected with food production. A Potato lecture will be given in London at the Mansion House, at 3 p.m. on February 13, when the Lord Mayor will occupy the chair. A second will be held in Westminster, at the Caxton Hall, at 3 p.m. on Wednesday, June 19, at which the Rt. Hon. R. E. Prothero, President of the Board of Agriculture, has been asked to take the chair. Mr. W. Cuthbertson, V.M.H., J.P., will be the lecturer on both these occasions. The ordinary Fellows' tickets will not admit to these two lectures; special tickets can be obtained by applying to the Secretary of the Society, Vincent Square, Westminster.

GIFTS TO WAR HOSPITALS, CAMPS, &c.

The Society has sent out very large consignments of bulbs, seeds, and books, during the year, to the base hospitals and camps in France, and to the Prisoners of War Camp at Ruhleben. The thanks of the Society are particularly due to all who assisted by sending gifts for this purpose. The Society also provided the flower stall at the Albert Hall bazaar for St. Dunstan's Hostel in May, over which the Countess of Limerick kindly presided, many of the Fellows sending very large and valuable contributions.

WISLEY GARDENS.

The work at the Society's gardens has gone on uninterruptedly, though, of course, it has suffered very great inconvenience by the removal of almost the whole of the regular staff. In face of this fact the existing staff is greatly to be congratulated on the work accomplished. Some most useful trials have been conducted, particularly of wart-resistant varieties of Potatos. Reports on these trials will shortly be issued. A valuable exhibit of wart-resistant Potatos, with cooked specimens, with the same variety uncooked, was shown at the Society's fortnightly meeting on October 23, when it attracted much attention.

Experiments on the pruning and pollination of fruit trees are being continued, and numerous new crosses of vines, Strawberries, and Rubus are being grown.

The Society has made an offer to the Serbian Government to give free training in gardening to six young Serbians at Wisley, if the cost of their maintenance can be otherwise provided.

UNIVERSITY DEGREE IN HORTICULTURE.

The Council wish heartily to thank Sir Albert K. Rollit, Chairman of the Horticultural Education Committee of the Senate of the University of London, for the great interest he has shown in securing the institution by the University of a Degree in Horticulture. The Syllabus of Courses of Studies and Examinations will be found in the University Calendar for 1917.

REVISION OF PRITZEL'S INDEX.

The revision of Pritzel's Index has not escaped attention, and, as a first step, two Committees have been set up with a view of finding (a) the amount of information which those for whose benefit the revision will be mainly undertaken would wish the new Pritzel to include; and (b) the amount of information which those familiar with the preparation of works of this class consider that it may be possible to incorporate. By the aid of these Committees it is hoped to get matters in hand so as to be able to republish the work as soon after the war as possible.

WAR RELIEF FUND.

The work of the Society's War Relief Fund has made considerable progress during the year, but it has undergone a certain transition. As already stated above, the work falling on the Council and on the office staff had become more than they could accomplish. Accordingly an outlet was sought for distributing the work attendant upon the Fund by forming a new Committee and setting up a separate department for giving undivided attention to it. This was effected by appointing four members of the Council to act jointly with four members of the Ladies' Committee. The offices of the Fund are at present at No. 17, Victoria Street, Westminster.

OBITUARY.

It is with deep regret that the Council have to record the death of many Fellows, particularly the following: George Abbey, Elijah Ashworth, Lord Auckland, L. H. de B. Crawshay, C. T. Druery, V.M.H., Lieut. H. L. Foster, Alfred Hemsley, W. Marshall, V.M.H., Geo. Massey, V.M.H., Earl of Mount Edgcumbe, O. G. Orpen, Marchioness of Ripon, Chas. Ross, V.M.H., Leopold de Rothschild, Geo. Schneider, E. D. Till, William Thompson, Ph. de Vilmorin, and Walter Ware.

NEW V.M.H.

Owing to the death of five holders of the Victoria Medal of Honour, the Council have appointed the following gentlemen to this distinction, viz.: Mr. W. Jackson Bean, Mr. F. J. Chittenden, F.L.S., Sir Herbert Maxwell, Bart., F.R.S., D.C.L., LL.D., Dr. A. B. Rendle, F.R.S., F.L.S., and Sir Albert K. Rollit, D.C.L., LL.D., Litt.D.

NUMERICAL POSITION.

The following table shows the Society's position with regard to numerical strength during the past year:—

Deaths and Resignations	652
New Fellows	572
Numerical Loss	80
Total on December 31, 1916	13,911
Total on December 31, 1917	13,831

NATIONAL CHRYSANTHEMUM.

FEBRUARY 4.—Mr. Thomas Bevan presided at the annual meeting of this society, held at Carr's Restaurant, Strand, on Monday, the 4th inst. The Annual Report of the committee and Statement of Accounts had been circulated among the members, and were therefore taken as read. The report referred to the work of the society during 1917, including that of the Floral Committee, in connection with new varieties submitted for award. The accounts showed a credit balance of about £17. Sir Albert Kaye Rollit was re-elected president; Mr. Thomas Bevan, chairman of the executive committee; Mr. E. F. Hawes, vice-chairman; Mr. John Green, treasurer; Mr. C. Harman Payne, hon. foreign corresponding secretary; and Mr. C. H. Curtis, general secretary. The whole of the retiring members of the committee were re-elected, and Mr. H. J. Jones was elected in the place of the late Mr. E. Such. Following the formal business of the meeting, the chairman presented a testimonial to the late secretary, Mr. Richard A. Witty. The presentation consisted of an illuminated address and a clock. Several members spoke in appreciation of the services Mr. Witty had rendered, and Mr. Witty suitably acknowledged the gifts.

UNITED HORTICULTURAL BENEFIT AND PROVIDENT.

JANUARY 14. The monthly meeting of this Society was held in the R.H.S. Hall on Monday, the 14th ult. Mr. A. Bedford presided. Four new members were elected. Two members withdrew interest from their deposit accounts amounting to £7 0s. 4d. The sum of £61 18s. 9d. was passed for payment to the respective nominees of deceased members. The sick pay for the month on the ordinary side was £77 5s. 8d., State Section £34, and maternity benefits £10 10s.

CROPS AND STOCK ON THE HOME FARM.

BARLEY.

WHERE the land is specially suitable, and the season favourable, Barley forms one of the most profitable farm crops. The Government price of 65s. per quarter for malting samples cannot but be remunerative when we consider that even a fair crop of five quarters per acre is easily produced, and at this low estimate means a gross return of £17 per acre.

Barley can be grown on shallow soil overlying chalk, as the roots do not penetrate so deeply as those of Wheat. The roots of Barley not only start from the seed, but also adventitiously from the lower part of the stem, just below the soil.

Barley tillers more freely than Oats. If on the farm there is a choice of soil, then choose for Barley that which is light in texture and naturally drained, for example, that overlying chalk, and one in which Turnips are grown and fed off by sheep. Such stimulative foods as sheep droppings are all in favour of the Barley crop, provided, of course, this is not excessive from a too liberal allowance of cake or previous manuring for the preceding crop. If the soil is too rich the quality of the Barley is deteriorated, and there is considerable risk of the crop being lodged by heavy rains and winds as the ripening stage approaches. If the land is clean, as it should be, a good crop for Barley to follow is Wheat, provided the land for this cereal is in good heart. Good quality Barley may be expected even if the soil is not altogether thin, but of a calcareous nature.

A Clover ley is a good preparation if the ploughing and pressing were done in the early winter to enable a good tilth to be obtained at sowing time. This preparation is not always available, and does not admit of a second ploughing in spring, which is considered necessary for a good tillage for this crop, and especially if the surface soil is of an adhesive, cold, and unkind character.

An ideal preparation would be sheep fed Turnips during dry weather in November and December, ploughed at once 4 inches deep and again ploughed twice if possible previous to sowing, and given plenty of "work" to ensure a fine surface and a good tilth.

The autumn ploughing of Wheat stubble ensures such a preparation, as the pulverising effect of winter frost and wind on the surface would be assured, and, if dry weather ensued in February, then plough and cultivate well to disintegrate all particles of Couch, should this weed be present, thus bringing it to the surface to be picked off and burnt.

How the seed should be sown varies according to circumstances. Drilling is the best method, as the seed is deposited at a uniform depth, thus ensuring an even and regular germination and future growth. Consequently the ripening process is simultaneous. This is highly important, as where the ripening is unequal the quality of the Barley is uneven, and the later ripened ears dilute the superior or earlier ripened corn, which is fatal to a good sale.

Broadcasting the seed, or even sowing with a Massey Harris cultivator, although more expeditious, does not commit the seed at such an even depth, and this is in many instances the cause of the crop being, to use a local term, "hedge grown," which means that the crop contains both ripe and green ears.

March is a good time to sow if the "season" land in good working order is assured. Early in April is not too late in the Southern Counties provided the weather is favourable to growth during May and June. Early-sown Barley as a general rule produces superior corn, and the ripening is more uniform.

In some districts drilling is done in February, and even in January, but this should only be in favourable situations, where late spring frosts are not common, as the growth is liable to be checked, which cannot but be detrimental, as irregular growth is not conducive to success.

The quantity of seed sown per acre varies in districts; as a rule three bushels are sufficient, as the tillering properties are greater than in Oats.

The application of stimulants during the growing stage requires much thought and judgment; much depends on the soil and the previous crop. Too much manure is injurious, while too

little results in a defective yield of both straw and corn; also in the quality, which is important. Although March and the early part of April is considered to be a good general time to sow, good crops have resulted from May sowings, but this can only be by the aid of showery weather and bright sun from then onwards through June and July. I merely mention this to show those who cannot sow earlier for various reasons that it is still possible to obtain a reasonable crop, but not of the highest quality, by sowing late.

With Wheat and Oats a complete change of seed is beneficial, but in the case of Barley it is not so imperative, as when a particular variety proves satisfactory the same strain of seed may be employed successfully for several years on the same farm.

In some cases, where Barley is desired, and there is little choice of land, some stimulant may be necessary. For instance, if the Turnips or Swedes grown as the previous crop were carted off for store-fed cattle, then the land under such conditions would need manuring.

When preparing the soil for the seed, sow evenly over every acre 3 cwt. of superphosphate, and when the Barley is well through the soil add 1 cwt. of sulphate of ammonia per acre, which will give a fillip to growth.

The following are desirable varieties:

Chevalier.- The most popular of all Barleys, introduced by the Rev. D. Chevalier in 1830. A well-grown ear produces sixteen grains on each side of the rachis.

Hallett's Pedigree Chevalier.—Selected by the late Major Hallett in 1861. A prominent feature of this strain is its tillering properties. In every respect is this a good variety for general use.

Archer's Stiff Straw.—A very prolific Barley, and, as its name implies, it is not so liable to lodge, owing to the stiffness of its straw. It is an exceedingly good variety for general use.

Goldthorpe.—This Barley was introduced in 1889 by Mr. Dyson, of Goldthorpe, and is highly prized by many.

Standwell.- This sort is said to ripen earlier than any other variety, which is a distinct point in its favour. *E. Molyneux, Swanmore Park Farm, Bishop's Waltham.*

Obituary.

JOHN POPE.—By the death of Mr. John Pope, which occurred on the 26th ult., in his 71st year, a well-known and highly esteemed personality has been lost to Midland horticulture. The deceased's family had been associated with the nursery business for upwards of 130 years. The founder of the firm—Mr. Luke Pope—who was born in 1740 and died in 1825 at the ripe age of 85 years, was the great-grandfather of the late John Pope. The business was established at Gibb Heath, in the Handsworth district of Birmingham, where it was continued until 1865, when, owing to the growth and changed conditions of the neighbourhood, together with the increasing atmospheric impurities, the business was transferred to King's Norton, at that time an open agricultural district in Worcestershire, about five miles from Birmingham. About seven years ago the failing health of Mr. Pope necessitated the closing down of the business, with the exception of the Daffodil portion of it, which is still being carried on by his two daughters. Deceased took an active interest in all matters relating to horticulture. He was mainly responsible for the establishment of the King's Norton Floral Society, and for a time acted as hon. treasurer. His connection with the Birmingham Chrysanthemum Society extended over very many years. He was also a warm supporter of the Birmingham Gardeners' Mutual Improvement Society since its inception in 1886. The part he took in assisting the late Mr. Robert Sydenham to found and carry on the Midland Daffodil Society will be within the recollection of early members; and he also served on the Daffodil Committee of the Royal Horticultural Society. His remains were interred in King's Norton churchyard on the 30th ult.

HENRY CARINGTON BOWLES.—We regret to record the death of Mr. Henry Carington Bowles, J.P., for many years Governor of the New River Company, who has died at Myddelton House, Waltham Cross, at the age of 87. Many of our readers are familiar with the beautiful gardens at Myddelton House, which are the especial care of Mr. Bowles' son, Mr. E. A. Bowles, a very keen horticulturist, the chairman of the R.H.S. Scientific Committee, and a member of the Floral Committee.

Answers to Correspondents.

CAMELLIA: *A. D. H.* The ashes spread over the surface of the border would not in themselves be harmful to the Camellias, but they might conceal the fact that the border was getting too dry, and thus lead to slight neglect as to watering. Further, we do not think the composition of the soil you are using is quite suitable; it should consist mainly of fibrous, turfy loam, such as the top spit of an old pasture, the re-

LUKE POPE, *circa* 1740-1825.

mainder being made up of tough peat and well-decayed leaf-mould from such trees as the Oak and Beech. To this compost some silver sand may be added to keep it porous, but the soil must be made very firm and thoroughly well drained. Charcoal added to the compost will serve to keep it from becoming sour.

NAMES OF FRUITS—*In the naming of fruits, we desire to oblige our correspondents as far as we can, but the task would become too costly and too time-consuming were there no restrictions. Correspondents should observe the rule that* NOT MORE THAN SIX VARIETIES *be sent at any one time. The specimens must be good ones, if two of each variety are sent, identification will be easier. The fruits should be just approaching ripeness, and they should be properly numbered, and carefully packed in strong boxes; cardboard is often smashed in the post. A leaf or shoot of each variety is helpful and in the case of Plums, Peaches and Nectarines, absolutely essential. In all cases it is necessary to know the district from which the fruits are sent. By neglecting these precautions, correspondents add greatly to our labour and run the risk of increased delay and incorrect determination. We do not undertake to send answers through the post, or to return fruits. Fruits and flowering plants must not be sent in the same box. Delay in any case is unavoidable.*

Chelwood. Clay-gate Pearmain.—*T. L. I.* 11, Ashmead's Kernel; 16, Fearn's Pippin; 27, Sturmer Pippin; 5, Gascoyne's Scarlet; 17, Egremont Russet; 1, Royal Russet; 9, decayed; 23, Cox's Orange Pippin; 24, not recognised—probably a local variety.—*G. H.* Reinette Van Mons.—*J. E. A.* Glou Morceau.—*F. B. L.* 1, D'Arcy Spice Pippin; 2, Annie Elizabeth.

POLLINATING PLUMS: *W. W.* Victoria or Czar would be a suitable variety as a polleniser for Kirke's Plum, which can scarcely be termed an early variety. Coe's Golden Drop might serve, though it is one of the least self-fertile Plums. Nearly all the Gage Plums fruit better when pollenised by other sorts, but Denniston's Superb Gage is a self-fertile variety. Probably this Plum would be too nearly off blossom when Kirke's was in full bloom to be a good polleniser for it, but a tree or two might be tried, as the variety is well worth growing. This may also be said of Oullin's Golden Gage.

POTATOS FOR SANDY SOIL: *R. J. E. M.* The variety King Edward VII. is an early main-crop and one of the most productive, but while it is quite suitable for sandy or heavy soils it does not succeed in sheltered gardens of restricted space. The tall haulm even gets destroyed by aphides and the tubers fail to mature, remaining watery and tasteless. Do not, therefore, plant King Edward, Arran Chief, or other tall growers in closely fenced gardens. The variety Sir John Llewelyn is of medium height, and produces large, kidney-shaped tubers of excellent quality in sandy or chalky soils. Other dwarf or moderate growers, of good quality and productive, are Early Puritan, Duke of York, and Sharpe's Express. Somewhat earlier and equally good are Harbinger, Midlothian Early, Witch Hill, and May Queen, the last being one of the earliest. In case the first-named may be sold out, the other six will give you choice of substitutes. May Queen is excellent for early borders and forcing, but may not crop so heavily as the others in sandy soil. All are white-skinned and white-fleshed except Duke of York and Midlothian Early.

RED CURRANTS ATTACKED BY FUNGUS: *C. E.* The dark red excrescences on the shoots of your Red Currant are the ascigrous stage of a fungus known as Nectria cinnaharina, the common name being Coral-spot Disease. The fungus is commonly seen on dead branches, and especially on old Pea sticks. The species also commonly lives as a parasite, and in the case of living plants, gains an entrance through wounds in the bark. The fungus spreads in the interior tissue, and is often present in parts not apparently affected. Cut out all the disfigured branches well below the pustules, and burn them, together with all fallen twigs or branches.

TURF: *J. H.* The unsatisfactory condition of your turf is apparently due to lack of drainage. The sample you sent us is in a very sodden condition, and the weak, unsatisfactory growth of the grass points to insufficient aeration of the soil. First thoroughly drain the land, and then top-dress the sward with some rich compost, such as old potting mould mixed with well-rotted rung. Sweepings from gravel roads, provided they are free from motor oil and petrol, would also be beneficial. If the lawns are not used in winter, dress them in late autumn with farmyard and stable manure, and use a brush-harrow to disintegrate the litter in the spring, afterwards finishing the process with a wooden rake. About the middle of February or beginning of March, give the turf a dressing of some nitrogenous manure, such as sulphate of ammonia, at the rate of one ounce to the square yard, and repeat the application after an interval of a few weeks. Do not employ phosphatic manures, as they tend to encourage the growth of Clover, which is present in the turf you sent. If worms are troublesome, use corrosive sublimate in the proportion of half an ounce dissolved in fifteen gallons of water. When the worms come to the surface they should be swept up, as they would poison fowls which might eat them.

Communications Received. — S. A.—J. H. P.—G. H. H. W.—A. W. B. C. A. O.—J. G. W.—J. K.—S. R. C. T. S. R. H. S.—W. W.—A. C.—F. J.—R. I. L. F. S.—L. S.

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CONTENTS.

ILLUSTRATIONS.

HIPPEASTRUMS.

HIPPEASTRUMS, which in many gardens are still known as Amaryllis, are propagated from seeds and offsets; the flowers are easily cross fertilised, and, as a rule, the plants produce seed freely, so that the usual method of propagation is by seed.

When the seeds are harvested they should be dried for a few days, and then sown in pots or pans filled with light, sandy soil, taking care not to cover them too deeply. The seed pan should be plunged in a propagating case having a bottom heat of 65° to 70°.

When large enough to handle the seedlings should be pricked off into pots of light, rich soil, and later they should be potted singly into small pots. The pots containing the seedlings should be plunged in a mild hot-bed, where, in a temperature of 60° to 70°, enclosed with a moist atmosphere, they should make rapid progress. The plants should be afforded larger pots as they require increased root space but very large pots should not be used; until the plants reach a flowering size receptacles 5 or 6 inches in diameter are quite large enough. If well grown, a goodly proportion of the seedlings should be of flowering size at the end of two years.

After having attained to flowering size and fully completed their growth, the plants should be rested by withholding water and lowering the temperature. Where large quantities are grown, and suitable conditions available, the seedlings, instead of being grown in pots, may be planted out in beds. If this method is adopted the seedlings should be pricked off into pans or boxes and grown on for a time until they are large enough to plant out. The most suitable place to grow the bulbs in this manner is the bed of a propagating house where there is bottom heat.

A layer of clinkers should be placed at the bottom of the bed for drainage, and over the clinkers a layer, some 6 inches deep, of good mellow loam, mixed with a little bone-meal, leaf-mould, and coarse sand. The bulbs may be planted 6 inches apart, and, with attention to syringing and watering, they should make rapid progress.

At the end of two years, when a proportion of the bulbs have attained flowering size, they should be lifted and potted for flowering, but before this is done they require to be rested by a gradual drying off, and if possible a lower temperature.

The resting or drying of the bulbs requires considerable care and judgment, as they must not be subjected to drought when they are growing. Water should be withheld as they are completing a period of growth; this is rather difficult to explain, but it may be most clearly explained by saying that the young seedlings make their growth in periods or cycles, with little or no rest between. If they are kept supplied with water, soil, and atmospheric moisture. This slight natural pause in their growth may be told by observing that there are no young leaves showing in the centre of the plant. The observant cultivator will anticipate this period by gradually withholding water; such a period with young plants should occur about October and November.

When the foliage has nearly all died down the bulbs should be lifted, and potted in suitably sized pots, using receptacles of the smallest sizes that will hold them. Plunge the pots in a mild bed, and the plants should soon start into growth, and a proportion of them show for flowering.

The potting or repotting of the plants is possibly the most critical stage in the culture of Hippeastrums, for unless great care is exercised they usually suffer from over-watering before they have made new roots. If through over-watering growth is weakened the plants fall an easy prey to the bulb mite, which seems always to be present in a collection.

Plants in flower may be removed to a warm greenhouse or conservatory, and when flowering is over they should be returned to the growing house and potted on if necessary. During the summer they may be placed outdoors, but the danger of frost in autumn and winter must be carefully guarded against. Water must be carefully applied, as the bulbs are now in full growth and the pots filled with roots; ample supplies of water are necessary, and dilute liquid manure or soot water should be used twice a week, alternately with a concentrated fertiliser.

As the plants complete their growth, water and liquid manure are withheld, the plants lifted from the beds and placed in a cooler house, where they can be exposed to full sunshine.

When required to flower in the house they may be started into growth in January, February, or March, according to the season they are required to flower. Those that do not require repotting should be selected for the earliest flowering batches, for, being established in the pots, they readily start into flower and growth.

Regarding the general collection, as the plants complete their growth they should be taken from the bed and removed to a cooler and drier house, and water gradually withheld. Early in the New Year they should be examined, and all plants requiring repotting should be shaken out, cleaned of all loose scales, the decayed base of the bulb and decayed roots, washed with an insecticide, and afterwards dusted with lime, powdered charcoal, and flowers of sulphur. Afterwards repot them in clean, carefully drained pots, using receptacles of a small size. The compost should consist of good medium loam with the addition of a little bone-meal, soot, leaf-mould and sand.

Plants in good condition at the root should have some of the surface soil removed, replacing it with a top-dressing of a rich compost.

PROPAGATION BY OFFSETS.

Propagation by means of offsets is adopted when it is desired to increase the number of any particular variety. The offsets should be detached when the plants are being repotted, taking care not to damage the base of the bulb. The offsets are the more readily detached without injury if left until they have grown to a considerable size. They should be potted up in small pots and treated in every respect like the older bulbs.

Unless it is desired to increase any particular sort by this means, offsets are best cut away from all flowering bulbs.

Red spider attacks plants grown in a dry atmosphere, but can be kept in check by syringing with clear water. Thrips are often troublesome, and may be kept in check by the same means and by fumigating. Mealy bug and bulb mites are the worst enemies. If mealy bug gains a footing on the plant it is very difficult to eradicate, as the pest gets between the scales of the bulbs, where it is difficult to dislodge. The only remedy is sponging and brushing them out with an insecticide. Hippeastrums should not be grown in houses containing other plants.

The bulb mite (Tyroglyphus longior) is said to be accompanied by a fungus (Sporotrichum Sarcoptidarum), which appears as white patches on the mites. Some gardeners say it is caused by the presence of the mite, others hold that it precedes an attack. I myself believe that mite is always present in a collection, and is more or less harmless, until some error in cultivation, such as over-watering, weakens the plants and lays them open to attack.

If a collection becomes badly infested, prompt and drastic measures are necessary; the bulbs should be shaken out, all loose scales and decaying parts removed, and the plant washed carefully in an insecticide. Place the bulbs head downwards to drain, and afterwards dust them with powdered charcoal, lime, and flowers of sulphur. They should be potted in fresh compost.

The house should be cleared out and thoroughly cleansed, removing and destroying all plunging material. The walls of the plunging-bed should be well scrubbed with hot water and soft soap, and afterwards sprayed with a strong solution of carbolic acid.

All wall surfaces should then be washed with fresh lime, to which is added a good handful of flowers of sulphur to every bucketful of limewash. *J. C.*

PLANT NOTES.

HIPPEASTRUM ACKERMANNII OR ACRAMANNII.

THERE seems to be a difference of opinion with regard to the correct name of this old hybrid Hippeastrum or Amaryllis, as it is still frequently termed. In Nicholson's *Dictionary of Gardening*, and in the two *Kew Hand Lists of Tender Monocotyledons* of 1907 and 1915, it is spelt Ackermannii. This would appear to be conclusive evidence of its correctness, but in an article on Hippeastrums in *Hortus Veitchii*, p. 467, the name is referred to as Acramannii, with the following explanation: "This received the name of Acramannii (and also the erroneous one of Ackermannii), and was the result of a cross by Messrs. Garraway and Sons, of Bristol, in 1835, between Hippeastrum aulicum, H. platypetalum, and H. psittacinum. It was named Acramannii in compliment to G. Acraman, Esq., of the city of Bristol. This was unquestionably the finest hybrid yet raised, but a few years later was eclipsed by a seedling of the same firm, flowered in 1850 from Hippeastrum aulicum crossed with the hybrid Johnsonii, named Acramannii pulcherrima, from a resemblance it bore to the original hybrid. This last is of great interest, as one of the parents used by Messrs. Veitch some years later, in the production of the first Hippeastrum raised at Chelsea." *W. T.*

AGAPANTHUS UMBELLATUS IN THE OPEN.

IT may interest readers who cultivate the Agapanthus as a hardy plant to learn that Agapanthus umbellatus, in a dry border facing

south-west, and sheltered from the north-west, north, and east, remained quite fresh and green until the fourth week of December, when the foliage was touched by frost, became flaccid, and lost some of its colour. The plant is unprotected in winter, save by its own foliage, which I find sufficient to save it in the spring, when the young leaves are most liable to injury. A plant of A. Mooreanus, with the same exposure, but not so sheltered, lost its freshness early in November, and the old leaves are now soft and colourless, although it is in other respects hardier than A. imbecillanus. — *S. Arnott, Sunnymead, Maxwelltown, Kirkcudbrightshire.*

COLUMNEA BANKSII.

AMONG the more valuable stove plants that have been introduced to our gardens during recent years are several handsome species of Columnea, including the erect-growing C. magnifica, C. Oerstediana, and C. Zahnii, all of which have large scarlet flowers, the last two being of pendant habit. For long before these species were introduced we had the pretty C. scandens and the sombre-coloured but curious and attractive C. Schiedeana, and now to these have been added certain hybrids raised at Kew and Cambridge, so that it would be easy to make up a charming group of these useful basket Gesnerads. One of these hybrids is illustrated in fig. 27. It was raised by Mr. G. H. Banks, now of the Botanic Garden, Glasgow, when foreman of the Cambridge plant houses, and I have pleasure in giving it his name. It was raised between C. Schiedeana, the mother parent, and C. Oerstediana, perhaps the finest of the three species first mentioned above, and is an improvement on either parents, inasmuch that it is equally as showy as the male parent, C. Oerstediana, and much more robust in growth. While C. Oerstediana unfortunately has been lost here, C. Banksii lives on quite happily. The hybrid shows clear traces of the C. Schiedeana in certain obscure markings of the flower, but the leaves are much smaller, and in the colour and size of the flower and also the shape of the leaf, it is entirely different. In colour of flower, in habit, and foliage it most nearly resembles C. Oerstediana. The corolla is 3 inches long, and measures about 1½ inch across; the upper lobe measures about ¾ inch in width and the same in length, while the narrow lip is ⅞ inch long, and rather more than ½ inch in breadth. The exterior of the corolla is sparsely hairy, and the corolla is curiously saccate at the base, the pouch probably secreting honey. The mouth of the corolla is marked by obscure yellowish lines from the influence of C. Schiedeana. There is a curious thick scale-like gland at the base of the ovary. A hybrid raised in these gardens and at Kew between C. glabra and C. Schiedeana has also a more robust habit than C. Schiedeana. The cultivation of Columneas is not, as a rule, difficult; C. Oerstediana and C. glabra, however, require careful treatment. These plants, though belonging to a different tribe of the Gesneraceæ, strongly recall the genus Aeschynanthus, but the members of the latter genus are Asiatic plants, while Columneas are all natives of tropical America. *R. Irwin Lynch.*

FIG. 27.—COLUMNEA BANKSII.

THE ROSARY.

SPECIALLY USEFUL ROSES.

ONE of the most experienced of English rosarians recently gave it as his opinion that of all the many new Roses annually brought into commerce, not more than two or three survived the third year of their introduction to an interested but critical public, and he believed this to be true alike of those varieties which did or did not receive the distinction of a Gold Medal, Award of Merit, or similar mark of approbation, when exhibited. He added that the proposition would be found to be equally true if applied to the new Roses observed while growing and reported on at the trial grounds at Bagatelle, in Paris. Seeing that the number of new Roses introduced into commerce yearly is 200 to 300, this would give only about 1 per cent. of new Roses that become popular varieties, and the inquiry of a bystander whether raisers were aware of the kind of Roses sought for by the public, was in the circumstances not unnatural.

Raisers take very considerable trouble in testing and selecting seedlings before putting them on the market. Only small numbers of the best seedlings are retained and propagated, and many stories are told of Roses that have proved really satisfactory being saved from the rubbish-heap by some accident; it therefore seems to be the case that any real test of the suitability of a Rose for garden purposes can only be applied by trial in the garden. If this be so, we must not expect to be able to form a final opinion of any new variety until it has passed the only test that is worth consideration and the variety has been in actual cultivation for three or four years.

Let us consider the best dozen Roses for garden purposes, confining ourselves for the moment to the Hybrid Teas, as perhaps the most popular class among the generality of Rose growers.

The first half-dozen will require little consideration, and we may take as easily pre-eminent:—Mrs. E. G. Hill (pink), Caroline Testout (pink), Mrs. Edward Powell (crimson), Mme. Ravary (yellow), Mme. Léon Pain (salmon), Mme. Edouard Herriot (copper).

The next half-dozen will be more difficult of selection, but we shall probably not be far wrong with:—General McArthur (crimson), Gruss an Teplitz (crimson), Ophelia (blush pink), Prince de Bulgarie (apricot), Mme. Abel Chatenay (pink), Papa Gontier (pink).

Judging from my own garden and private preference, Richmond should have had a place, but I am conscious that some do not find it a success, and have therefore omitted it.

What, then, are the qualities that secure these Roses their pre-eminence as garden plants?

1. Possibly one should put first continuity of flowering, or at least a constant succession of flowering periods, with no long flowerless intervals between them. In this particular Richmond is unsurpassed among the H.T.s, but Mrs. E. Powell is nearly as good, and a better grower.

When the revival of gardening took place in the 17th and 18th centuries the Rose held for some time no very high place, and was quite secondary in interest to the Tulip, the Carnation and the Daffodil. This is often put down to the Court influence of Dutch William and the particular interests of the gardening writers of those days, but there was another and better reason for it. The Rose was then only a summer-flowering plant. When, under the influence of the three forms of R. indica, it became perpetual, or at least autumnal, its status rapidly and wholly changed, and with the growth of its perpetual character during the first half of the 19th century it easily outdistanced its competitors as a garden favourite. Continuity of flowering into late autumn is therefore of capital importance.

2. Closely associated with the last character

is that of copious and healthy foliage. The antithesis of the flower and the leaf is a poetical conception, "and which will ye honoure, Tet me I pray, this yere, the Leafe or the Floure," and the poet chose the leaf. Perhaps he was right, for the wrong reason, as may sometimes happen with great men; for it is very certain that without the leaf there will be no flower. One has only to notice the dire destruction of all autumn flowering that may result in a garden from an attack of black spot, that strips the leaves from the plant and ends its flowering for the year; this will convince the most sceptical how closely healthy foliage is connected with beautiful blossoms.

In this connection there are some Roses on my list to which exception might be taken, for Mme. Abel Chatenay and Papa Gontier are somewhat sparse in foliage, and Gruss an Teplitz and Prince de Bulgarie, though when healthy they have copious and particularly beautiful foliage, are both rather readily attacked by black spot disease. To those who find the dwarf Papa Gontier too poor in growth I would recommend the climbing variety.

3. Hardiness is, of course, a necessity, and without it a variety rapidly disappears, but in this respect there is little to complain of as a rule among new Roses.

4. Colour is certainly important, in the sense that it should be definite. It is certainly the case that in the past we have been offered too many varieties of rather washy colouring. In this respect the late autumn flowers of Mme. Ravary leave much to be desired, but a good yellow variety that will retain its colour through the late autumn is still wanting; the second flowering of General McArthur is often poor in colour if hot sunshine prevails.

5. Form in the flower is the character that is most wanting in my list. Mrs. E. G. Hill, Ophelia, and Mme. Abel Chatenay have flowers that are nearly always well formed, while Caroline Testout, Mme. Ravary, Mme. Léon Pain, and Prince de Bulgarie are usually fairly well shaped, but most of the others are capable of a good deal of improvement in form, particularly in the centre of the flower, which often has relatively short petals.

6. Rain resistance, or the power to open the flowers well and retain them when open for a certain period of time in tolerable condition during wet and stormy weather is, in this country, of the utmost importance for a garden Rose. To accomplish this, the petals ought not to be too densely packed in the flower, lest the outer ones perish while still wrapped tightly round the blossom, which rots before it can open. Again, the petals must themselves be stout and leathery in texture to be able to resist rain as well as disease. For its size, Mrs. E. G. Hill is particularly good in this respect; and after two days' rain the beds of these plants will be found full of fine flowers. Mme. Léon Pain is rather easily spoilt by rain, but produces a fresh set of flowers so quickly that the spoiled blooms are hardly noticed.

7. The power to produce a fair proportion of good flowers without disbudding is another useful quality. The variety Mrs. E. G. Hill will do this, as will many of the H.T.s, both early and late, but in the late summer or second flowering they are apt to push up a single strong shoot bearing very numerous flowers, which are of little use if not thinned, while others somewhat resemble the H.P.s, and normally carry a group of flowers at the apex of the shoots. There would be much to be said in favour of a Rose that would habitually bear a number of branches, each carrying a single flower at the apex.

8. Finally, the good garden Rose must be a vigorous grower, producing stems stout enough to carry the flower erect, or nearly so, and yet not grow so wildly as to be unruly and unsuited for the restraint necessary in garden beds and borders. In this respect few varieties excel Mme. Ravary, which habitually makes numerous short-jointed branches, which ripen quickly and well. This good habit of growth, as it is called, is alike an absolute requisite and the point where new Roses most often fail.

It is to qualities such as these that we must devote our attention in experimenting with and selecting new Roses. The complaint that too many new Roses are offered—that we are overdone with varieties—is a very old one, and is alike unwise and unfair, as I hope to show; it was voiced by Rivers in the fifties and Shirley Hibberd in the sixties, and we hear it to-day. Now, if we begin to try to improve annuals, as Mr. Wilks did his Shirley Poppies, we may sow the seed and begin to select and breed from the best plants in the course of a season. It is not so with Roses, as it is often some years before seedling Roses flower. Finally, a stock of the selected seedlings must be budded, and a preliminary observation affirmed or rejected. The best are brought into commerce, and the public is able to purchase them and commence observations for the purpose of approval or rejection in the ensuing season.

The late Sir Michael Foster once remarked that the most interesting part of gardening was the raising of seedlings and the watch for improvements on existing types. The raisers have done the preliminary work of hybridising and the rejection of the obviously worthless, and it remains for the gardener to enjoy the process of subjecting the results obtained to the final test of cultivation in the garden. In this spirit he will secure much interest and satisfaction from the study of new varieties.—*White Rose.*

TREES AND SHRUBS.

THE RED OAK.

At least three species of the Oaks of eastern North America bear the name, or merit the name, of Red Oak, by reason of their richly coloured autumn foliage. But Quercus coccinea (*i.e.* perhaps, the strongest claim to this distinction. My attention was attracted in late autumn to a lovely avenue of trees of this species growing on a small estate here in Henfield, Sussex, called "Red Oaks" held by the Rev. H. B. Dunlop. When we arrived at Henfield at the beginning of October, Scarlet Runner Beans and Dahlias were still flourishing, but by the middle of the month these exotics were in rags. Soon the trees assumed their varied autumn tints, which were very brilliant in this district of noble trees. The gold of the Elms and the crimson of Quercus coccinea were perhaps the finest and certainly the latest of the colour tinting, the foliage surviving ill of frost in mid December. We had sunny days at the time, which brought out the most striking colour effects.

The Red Oaks house, Mr. Dunlop informed me, was built in 1536, and the original Oaks were planted about the same date. There are several trees, all more or less damaged by the terrific windstorms that occasionally sweep over the Downs. The best specimen is about 60 feet high, with a spread of 76 feet and a girth of 6 feet 3 inches. Examples, of similar dimensions, exist in West Dean Park, Chichester. But this Red Oak is still very rare in the United Kingdom, though it must have been introduced very early, as a specimen is said to have been growing in Bishop Compton's garden at Fulham in 1691. At Henfield, as I was told by Mr. Park, the gardener, Quercus coccinea rarely bears Acorns, and never more than a very few—so few that they are germinated in pots to escape being eaten by mice. Some young trees, about ten years old, retained their brilliant foliage longer than any other kind of tree. The leaves, it may be added, are elegant in shape and delicate in texture, with brittle-tipped ultimate lobes and borne on long, slender stalks.—*W. Botting Hemsley.*

NOTES FROM AMERICA.

THE JERUSALEM ARTICHOKE.

The so-called Jerusalem Artichoke is really a Sunflower, Helianthus tuberosus, and a native of the United States. It is one of a group of tuber bearing Sunflowers, and was known to the Indians as an important source of food before the arrival of the white man. According to Dr. V. Havard, the tubers were mentioned by Champlain as early as 1605, and were brought to France by Lescarbot, who, in 1612, described them as being "as big as small Turnips, excellent to eat, with the taste of Artichoke, but more agreeable, and multiplying in a wonderful way." Parkinson, in 1629, said that the tubers were commonly offered for sale in London. In spite of this excellent start, the plant has of late years been little used in America, except more or less as food for hogs, which do their own harvesting. Vilmorin has long advocated its use in France, offering four varieties in his catalogue. Sutton's catalogue (1917), just received, lists three varieties, with a statement that six pounds of tubers planted gave a yield of 16 stones. Here, in Boulder, Colorado, we raised them this year in unfertilised ground at the rate of 9.66 tons to the acre. They were planted 3 feet apart in the row, which were made 2 feet apart. Apparently they could be more crowded without disadvantage. There were no pests of any consequence. We have used the tubers a great deal as a vegetable, and like them very much. According to published analyses, they have about the same food value as Potatos, with a little more protein (2.6, as against 2.1 per cent.) and less carbohydrate. In other places very much larger crops have been recorded. Thus in the State of Washington it was reported by W. H. Lawrence that, in 1909, Red Jerusalem Artichokes yielded at the rate of 20.26 tons to the acre, and in 1910 the White variety, on sandy soil, cropped at the rate of 38.9 tons per acre. When fertiliser is used, H. Blin concludes that potash is the important element to be supplied.

In view of all these facts, it seems that this plant should be more freely grown, especially in war times, when it is so important to get a maximum yield.—*T. D. A. Cockerell, Boulder, Colorado.*

THE EFFECT OF ONE PLANT ON ANOTHER.

Mr. Spencer Pickering's crucial test (see Oct. 27, 1917, p. 170) in growing three Mustard plants in separate pots and submitting one of them to seepage from a tray containing soil in which Mustard had been sown or was growing, proves that plants of the same species develop an aversion from growing in the company of each other. This aversion, or toxic principle, is well known and pronounced with Cruciferous plants. Mr. Pickering repeats his experiment as related in the third column of p. 170. The whole tenor of the experiments, and the assertion that the roots of grass form a poison detrimental to tree growth, has not been proven; at least, the evidence as submitted in the columns of the *Gardeners' Chronicle* is inconclusive. There has been much controversy on the question of growing grass in orchards, for a half century or more. Thomas Meehan, while editor of the *Gardeners' Monthly* contended that he could never see that evil results followed. Growing grass in orchards, especially in the case of old trees, in my experience seems to serve as a check on the over production of wood, and acts in the very same manner that root-pruning does in developing fruit-spurs. It is virtually a check. Young Apple orchards, on the contrary, are benefited by being kept clean and the soil cultivated, but it is a common practice toward the end of the summer to sow the ground down to winter Wheat or Rye. Grass in orchards removes from the soil great quantities of moisture, and in a

sense robs the trees of nourishment yet it may have the effect of causing the young growths of the trees to ripen. The evil, if any—which I very much doubt in the case of old trees—is physical, and not toxic. *Mr. c. MacElwee, Philadelphia.*

SUNFLOWER SEED OIL.

ACCORDING to a report* to the National Paint, Oil and Varnish Association (U.S.A.), oil from Sunflower seeds may be used instead of Linseed oil in mixing paint. Almost as good as the latter so far as paint is concerned, Sunflower oil is said to be superior to Linseed oil for varnish.

STANGERIA PARADOXA.

STANGERIA might be called a freak genus of an order, Cycadaceæ, which occupies an isolated position in the vegetable kingdom. The plant has a stem that suggests a Turnip, and leaves which in form and venation so closely resemble some Ferns that when first introduced it was mistaken for one, and was actually described as a Lomaria. The inflorescence is a cone, in the male plant cylindrical (see fig. 28), and in the female plant short, after the style of an Artichoke (see fig. 29). The plant grows wild in South Africa, the largest forms of it being found in the tropics, whilst in the more temperate regions it is quite stubby. A botanist might find material in the variations for half-a-dozen species, or, if reasonable, look upon them all as forms of one. The plant has been in cultivation since 1851 when it was sent to Mr T. Moore, Chelsea Botanic Gardens, as a Fern. The largest specimen I have ever seen is at Kew, and it came from Hermann Wendland, who grew it in the botanic gardens at Herrenhausen. The cones illustrated were produced at Kew, the three males by the big plant which for many years has been cultivated in the Victoria House, the conditions there being evidently to its liking. *W. Watson.*

FRUIT REGISTER.

UNDESIRABLE APPLES.

THE published lists of Apples, which include something like 300 varieties, could be much reduced with material gain to the community. There are some who advocate the planting of numerous sorts on the ground that if one fails to crop others may not. If the latter are varieties of poor quality there is not much gain. Nurserymen are not in favour of so many varieties: too often to them it means occupying valuable space for some years with sorts that can only satisfy the whim of a few customers, when trees of three sorts will prove much more satisfactory. Gardeners in large establishments plant many varieties, knowing that their employers like to see a well-filled fruit room with much variety. I need hardly say that not to this class of cultivator, but rather I try to teach those with little experience which are the most desirable sorts to grow. The following varieties could easily be dispensed with to a start, as there are others more valuable in season at the same time:—Emmaus's Benette, Middlecott's Pearmain, Nancy, Yorkshire Beauty, Wealthy, Monks' Codlin, Betty de Potton, Beauty of Stoke, Barchard's Seedling, Bess Pool, No Surrender, Lemon Pippin, Cockpit, Bedfordshire Foundling, Crimson Queening, Dr. Harvey, Duchess's Favourite, Domino, Glory Mundi, Hawthornden, Gravenstein, King of the Pippins, Royal Oak, British Queen, Wormsley Pippin, Red Astrachan, Ashmead's Kernel, Allfristo, Scotch Bridget, Rougemont, Castle Major, Scarlet Nonpareil, Queen Caroline, Schoolmaster, Scarlet Pearmain, Syke House Russet, Yellow Ingestre, Barnack Beauty, Baron Wolseley, Calville Blanche, Calville Malingre, and Cardinal. *H. Molyneux.*

* See the *Seed World*, Nov. 5, 1917.

The Week's Work.

THE KITCHEN GARDEN.

By F. JORDAN, Gardener to Lieut.-Col. SPENCER CLAY, M.P., Ford Manor, Lingfield, Surrey

EARLY PEAS.—Rough pits answer well for forwarding dwarf early Peas, with or without glass coverings; large frames can be similarly utilised. The best results usually attend the practice of raising the plants in small pots, turves, or shallow boxes for planting out either in pits or in the open ground. Sow the seeds thinly and germinate them in a cool house. Make a shallow hot bed in a pit, and cover it with a layer of fairly good soil to a depth of not less than 9 inches. By the time the Peas are fit to transplant the soil will be warmed through.

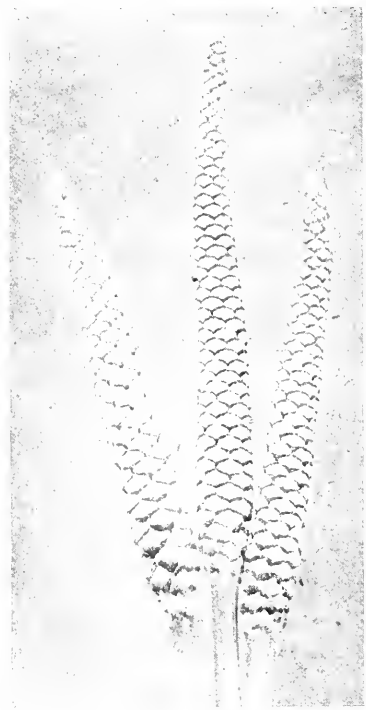

FIG. 27.—MALE CONES OF STANGERIA PARADOXA.

As an early crop is most needed, such varieties as Little Marvel, Eight Weeks, Laxtonian, and Pioneer should be selected; the three former may be put out rather thickly in rows 15 inches apart, but for the stronger varieties allow a space of 18 inches.

PEAS ON EARLY BORDERS. There is always a risk attending very early sowing of Peas out-of-doors, and especially on heavy soils. The Marrow fat varieties being more tender than round-seeded sorts, the surest way is to sow as advised above, and better plants result than when raised in heat. If the soil on a warm border is in a suitable condition such varieties as Pilot and Excelsior may be sown; these would closely follow those raised in frames, and furnish a supply until the taller varieties are ready for use.

SPINACH.—The weather has not been favourable to the growth of Winter Spinach, and the first opportunity should be taken to sow a few rows on a warm border. Scatter the seeds rather freely in shallow drills; later sowings may be made midway between rows of Peas, and repeated as successional sowings of Peas are made to keep up a constant supply. The round-seeded or summer Spinach is the most suitable kind for early cropping.

PARSNIPS.—This valuable winter vegetable is of easy cultivation, provided it is grown in deeply-dug ground free from fresh manure. Parsnips may follow a Celery crop, as the soil for Celery is worked to a good depth. If exhibition roots are required, make holes 3 feet deep and 15 inches apart with an iron bar, filling them with a light, rich compost, and sowing three seeds on the top of each station. The Parsnip requires a long season of growth, therefore the seed should be sown as soon as the weather is favourable and the soil in a suitable condition to receive them. Sow the seeds thinly in drills made 15 inches apart, and thin the seedlings to 6 or 9 inches apart. The Student is a reliable variety, and gives roots of good quality.

RHUBARB.—The growth of Rhubarb may be hastened considerably by placing pots over some of the crowns, as soon as they show signs of starting into growth, covering the pots with long strawy litter and leaves. The present is a suitable time to make fresh plantations of Rhubarb, using stools that have been forced in deeply-cultivated, heavily-manured ground, as the roots grow deeply. Allow a space of 4 feet between the rows and 3 feet between the roots of moderate-sized varieties, but for strong-growing sorts the distance should be 4 feet between the roots in the rows.

THE HARDY FRUIT GARDEN.

By JAS. HUDSON, Head Gardener at Gunnersbury House, Acton, W.

FIG TREES ON WALLS.—It is time to remove some of the protective material, whether evergreen boughs, Bracken Fern, or straw, from Figs trained to walls. In a few weeks it can be taken away entirely, and the nailing and training of the trees attended to. If the trees are growing strongly, and not very fruitful, root-pruning may be necessary. I am of the opinion that if root-pruning were done more generally in the case of Fig trees in the open, there would be greater crops of this fruit. In the case of very luxuriantly growing trees, do not hesitate to prune the roots severely. To sever strong, downward-growing tap-roots it is necessary to open a wide trench at, say, some 3 feet from the wall in the case of medium-sized trees, and 4 feet for large trees. Excavate the soil to a depth of about 4 feet, and work under the ball to search out the gross-growing roots right up to the wall itself. In cases of extreme root growth, if the soil be too much on the wet side, the bottom of the border may need to be concreted. Place on the concrete a layer some 6 inches thick of old broken brickbats, with the mortar still adhering to them. Provide a drain to carry off superfluous moisture, and take means to prevent the Fig roots from passing beyond this drain into soil that will only be productive of leaf growth. Some are over-cautious in disturbing the roots of Fig trees, but I am convinced that it may be advantageously done in many instances. Figs in pots, as an example, may be shaken free of the soil and repotted in fresh compost without giving the tree only the slightest check. In no case is a large border advisable, for the Fig fruits best when the roots are in a restricted area.

SITES SUITABLE FOR FIG TREES.—In fruit gardens enclosed by large walls it is not a difficult matter to find a suitable place for Figs. The trees require the maximum amount of warmth and sunshine, and shelter from cold winds. The roots need a strong calcareous loam, with a free admixture of rough material, such as broken mortar rubble or limestone. In making new borders keep the surface somewhat higher than the surrounding soil to allow excess of moisture to pass readily away. For outdoor cultivation no variety equals the Brown Turkey, either in productiveness or in flavour: it is also as hardy as any; in fact, Figs are much hardier than is generally believed. A glass coping to the wall is a distinct advantage. Trees that have been trained for about two years in pots are the best to plant out-of-doors; they will not be too vigorous in growth.

THE ORCHID HOUSES.

By J. COLLIER, Gardener to SIR JEREMIAH COLMAN, Bart., Gatton Park, Reigate.

PLEIONE.—Plants of P. maculata, P. Wallichiana, P. praecox and P. lagenaria will, as they pass out of flower, soon develop new roots from the base of the young shoots, and at that stage they require repotting. After removing the plants from their pots, the greater portion of the old soil should be removed from the roots, and the pseudo-bulbs separated. In repotting, place several of the plants together in number according to the size of the receptacle, allowing a space of about 1 inch between each pseudo-bulb, taking care not to injure the young roots. Grow the plants in a position near the roof-glass in a house having an intermediate temperature. Afford the roots water sparingly until they have grown well into the new compost, after which give them copious supplies of moisture until the new pseudo-bulbs are fully matured. Syringe the plants overhead on bright days in order to keep down attacks of red spider. A suitable compost may be made with good fibrous loam and peat in equal parts, with sufficient crushed crocks and silver sand added to render the mixture porous.

CYMBIDIUM.—Plants of Cymbidium Traceyanum are passing out of bloom, and those that require to be repotted should be dealt with at once. This species, like many other Cymbidiums, resents root disturbance, therefore, if there is sufficient room in the pot for the plant to complete its new growth it will be better to defer repotting for another season. Moreover, all Cymbidiums flower most freely when the roots are pot-bound. Use a compost consisting of two-thirds rich fibrous loam and one-third peat or Osmunda-fibre, mixed with a liberal quantity of crushed crocks. Place a double row of potsherds over the bottom of the receptacle for drainage. Pot rather firmly, without damaging the roots. C. insigne, C. Lowianum, C. eburneum, and their many hybrids are developing flower-spikes, and require liberal supplies of water at the roots. Soak the compost thoroughly, but allow it to become moderately dry between each application, as nothing is more harmful to Cymbidiums than merely damping the surface when the roots need moisture. All the above-mentioned Cymbidiums grow best in a moist atmosphere, in a house having a night temperature ranging from 52° to 55°, with a rise of 5° or 10° during the day.

THE FLOWER GARDEN.

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

STOCK PLANTS FOR PROPAGATING. Place stools of summer-flowering Chrysanthemums in a warm temperature to induce the rapid production of shoots suitable for cuttings. See that moisture is never unduly withheld at the roots. If the stock of tall Lobelias is insufficient, the stools of these, too, should be placed in warmth, and watched lest pot should destroy them. In any case no long time should elapse before dividing the clumps in pieces and arranging them in cutting boxes in a compost of half loam and half leaf-mould.

PENTSTEMON AND VERBENA VENUSTA.—Pentstemons may be increased if the boxes in which the rooted cuttings are growing are placed in gentle warmth. If the plants are well rooted the use of a little manure will cause rapid growth, and when the tops are sufficiently extended they will strike root quite freely if inserted in sand and kept damp in the propagating pit. Seeds of Pentstemons should be sown forthwith, the seedlings being very slow in making progress, and, if they are small when planted out, the season's display may—or, indeed, almost certainly will—be poor. Another splendid flowering plant for these times is Verbena venusta, a little difficult to manage when not understood, but if the seeds are steeped for 48 hours in warm water, kept warm, sown and barely covered, the seed container placed in a stove temperature and the soil kept quite wet, the seedlings will appear shortly in vast numbers. The seeds continue to germinate for a long time, and the earlier seedlings should be pricked out into other receptacles as they become ready. Another way of propagating is to save the old plants and cut the underground stem into short pieces, which duly form roots and produce shoots.

THE MIXED BORDER.—If the flower border has not yet been forked over, let this be done forthwith. Make a point of doing this work when the stems of the plants are cut over at the end of the season, then all that is necessary at the present time is to break clods with the back of a rake and level the surface smooth, removing all rubbish that may have accumulated during the winter. When this work is deferred until the spring special care is needed that the pushing blades and flower-spikes of bulbous plants are not damaged or destroyed. Roses growing in the border should be pruned before proceeding to fork up the soil, and a week or two hence, when the surface has been sufficiently weathered, it will greatly improve the appearance of the border to rake it smoothly.

CARNATIONS. It is a mistake to delay the planting of Carnations from pots once the ground is in fit condition. I have reduced my stock of these plants very considerably, their propagation at a critical period for labour being difficult, but much labour may be saved in preparing the ground. I have been very successful with even show varieties and Picotees planted in unmanured ground, and those who still cultivate a large number of Carnations may safely treat their plants similarly.

SWEET PEAS. The sowing of Sweet Peas should be no longer delayed. Sow the seed rather thinly in cutting boxes, covering them with boards until they have germinated, as a precaution against mice eating them. When strong enough the plants should be potted singly into 4-inch pots, and after becoming established in the open border and staked should remain until the end of August. No position is better suited for Sweet Peas than in rows alongside roads or paths, for the flowers are effective and easy to gather. Dorothy Eckford, Countess Cadogan, Royal Purple, Dobbie's Cream, Clarkes Exeter, Duplex Spencer, Queen of Norway, Mauve Christine, Nubian, Afterglow, Asta Ohn, Edison Beauty, King White, Rosabelle and Thomas Stevenson afford a good selection of colours.

FRUITS UNDER GLASS.

By W. J. GOSS, Gardener to MRS. DRUMMOND, Keele Hall, Newcastle, Staffordshire.

EARLY FIGS. The earliest fig trees in pots require liberal supplies of water. Maintain a moist atmosphere, as the trees are very subject to attacks of red spider. Pinch the shoots at the fourth leaf, and keep the growths neatly tied to trellises. Liquid manure or other stimulants may be given the roots once or twice weekly when the fruits are swelling, but not if the trees are making excessive growth: The syringe should be continued until the fruits of the second crop are advanced. Established trees need constant attention in pinching and disbudding the shoots. It is necessary to remove all superfluous growths in their early stages, to prevent undue strain on the resources of the trees. A free use of the syringe will do much to keep red spider in check, and in this respect especial care is necessary where the trees are growing on trellises near the roof-glass. The large fig at Keele furnishes the whole roof of a house 51 feet long by 21 feet wide. The border is 4 feet wide, 35 feet long, and 21 feet deep. Seven varieties are grafted on this one old tree, and two heavy crops ripen annually. The tree is syringed with warm water twice daily, except in cold, dull weather, until the fruit commence to ripen, then a drier atmosphere is maintained. Directly the first crop is gathered syringing is again resorted to. A temperature of 60° should be maintained in the early house, with a rise of 10° by sun-heat.

EARLY STRAWBERRIES.—When the earliest Strawberry plants in pots have set their fruits, commence syringing again with tepid water twice daily during fine weather. Feed the roots with either liquid manure or a concentrated fertiliser once or twice weekly until the fruits show colour. These fertilisers should not be used too liberally, as strong doses would cause the fruit to have a bitter taste. Maintain a free circulation of air, and see that the plants do not suffer for want of water.

MELONS.—If the early Melon plants are not very promising it will be better to make a fresh sowing, for weak plants rarely fruit satisfactorily. The weather has been favourable to Melons, and with the lengthening days the plants should grow freely. Prepare the pots or beds a few days in advance of planting, to allow the soil to become warmed through. Place a heap of rich, fatty loam on a hot-bed formed of short manure and leaves. Plant firmly, whether in pots or beds. Plunge the pots into the fermenting materials. Maintain a night temperature of 70°, rising to 85° by sun-heat. Do not water the roots excessively, as this would cause the plants to collapse, and, unless the weather is exceptionally fine, one light syringing early in the afternoon at the time the house is closed will suffice. Place a neat stake to each plant preparatory to training them up the trellis. Make a further sowing to provide plants for successional cropping.

THE VINERY. Where young Vines were planted in a restricted area of an inside border last year, the cutting walls of turf will be found to be a mass of fibrous roots. Presuming the border was made 4 feet wide at the time of planting, a further similar area may now be added. The bulk of the material for forming the border should consist of firm, fibrous loam, mixed with rough mortar or lime rubble, crushed bones and charcoal or wood ash.

PLANTS UNDER GLASS.

By E. HARRISS, Gardener to Lady WANTAGE, Lockinge Park, Berkshire.

DRACAENA. Old plants of Dracænas which are becoming bare of leaves at the bases or are otherwise unsatisfactory may be made use of for propagating young stock. Specimens with good heads should be stripped of their lower leaves and the stems notched an inch or two below the remaining foliage. Over the notched portion of stem place a little turfy loam and fine sand. Cover this with a handful of moss and tie the whole tightly together with raffia. Place the plants in a house having a warm, moist atmosphere, and syringe them frequently with lukewarm rain water. Never permit the moss to become dry. In a few weeks the stems above the notch should be sufficiently rooted to be severed and placed in a suitable-sized pot. Afterwards grow the plants in a close atmosphere and shade them until the roots have become established in the soil. Water the roots with extra care until they have filled the pots. Another method of propagating Dracænas is to cut the stems of old plants into small pieces and bury the portions in boxes of fine sand. Place the boxes in a warm house and keep the sand moist.

ROSES IN POTS. Pot Roses which were placed indoors in the New Year are in active growth and flower-buds are forming. If the plants are well rooted, water may be given more liberally than hitherto. The use of stimulants will give vigour to the flowers, and diluted soot water, supplemented occasionally by a concentrated fertiliser, may be used. The Rose maggot will be active now, and must be watched for and destroyed. Climbing Roses are growing freely, and, if desirable, they may be hastened into flower by closing the house for a few hours in the afternoons, but the top ventilators should be opened in the evenings, more or less, according to the weather. Keep the roots well supplied with water, and if not already done, topdress the roots with well decayed horse manure. Use discretion in ventilating the houses, for if too much air is admitted in unfavourable weather mildew will attack the plants.

HYBRID COLEUS. A batch of Coleus plants may be raised from seed sown now in pans filled with sandy soil. Sow the seed rather thinly, to allow the young plants plenty of room to develop before they need potting. Water the soil copiously, using a very fine rose can. Place a sheet of glass over the seed pans and germinate the seeds in a warm, moist atmosphere. Cuttings may be inserted around the edge of a 4-inch pot. Place them in the propagating case and shade them from bright sunshine until roots form.

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Letters for Publication, *as well as specimens of plants for naming, should be addressed to the* EDITORS, 41 Wellington Street, Covent Garden, London. *Communications should be* WRITTEN ON ONE SIDE ONLY OF THE PAPER, *sent as early in the week as possible, and duly signed by the writer. If desired, the signature will not be printed but kept as a guarantee of good faith.*

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

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY, FEBRUARY 18—
British Wholesale Florists' Federation, Special General Meeting, Essex Hall, Essex Street, Strand, W.C., 2.30 p.m.

THURSDAY, FEBRUARY 21—
Manchester and North of England Orchid Soc. meet.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 39.6.

ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, *Thursday*, February 14, 10 a.m.; Bar. 30.7; temp, 46.5°; Weather—Dull.

Some Problems arising out of the Food Situation.

The chief problem which every owner and cultivator of a garden has to consider is the means whereby the garden may be best employed in order that it may make the household which it supplies as self-supporting as possible; or, if the garden be a large one, how large a surplus for the general use it can be made to produce.

The problem is not one which is easily discussed in general terms, for the discussion must turn on the size of the garden in relation to the numbers to be supplied from it.

Even though the garden is just large enough to supply the household in ordinary times, it cannot, unless a special effort is made, suffice under present and prospective conditions, for it must, if possible, be made to produce more nitrogenous foodstuffs than were needed when meat was plentiful and cheap, and it should somehow be made to contribute towards eking out the limited amount of fat available for food purposes. Inasmuch as leguminous plants, Peas and Beans, are the chief vegetable producers of nitrogenous foodstuffs, it would appear desirable that a larger area of the garden should be devoted to them. But at the same time it has to be remembered that though Peas and Beans are remarkably rich in proteins (nitrogenous foodstuffs), the yield per acre is far lower than that of crops such as Potatos, which are weight for weight far poorer in nitrogenous food substances. Thus the amount of protein contained in the air-dry seeds of Haricot Beans is about 23 per cent., whereas the Potato in its natural state contains rather less than 2 per cent.

Allowing that good garden cultivation will produce one ton of Beans (seed) to the acre, and that 12 tons of Potatos—no large yield for a garden—are produced on a corresponding area, it follows that the Potato, owing to its richness in carbohydrates (starch), produces more actual food than does the Haricot. There is, however, another aspect of the problem which must be borne in mind, and that is that whereas it would be extremely difficult to live on Potatos alone, or on Potatos and fresh green vegetables, it would be fairly easy to live on a diet of Potatos, Haricot Beans, and fresh vegetables. To obtain enough calories—.3300 per day—to supply the energy needed for active life, 11 pounds of Potatos must be eaten per day—a task which would be beyond the stoutest stomach; but if Beans are added to the diet in fair quantity, and the Potatos reduced correspondingly, a diet sufficient for flesh-forming as well as for energy-producing purposes would be obtained. Fresh vegetables would supply the essential accessory food-bodies (vitamines), and the only food substance likely to be deficient in such a diet would be fat. Yet, as Darwin observed in reference to men in South America accustomed to hard manual labour, their diet consisted solely of Beans and bread.

If, however, the garden is to supplement the butcher's shop as a source of nitrogenous food, and to that end Peas and Beans are grown more extensively, it seems evident that the pleasant luxury of such things as green Peas must be forgone, for in their fresh and unripened state Peas are by no means rich in nitrogenous foodstuffs. It is, therefore, to be concluded that of such crops as Peas, Broad Beans, Runner Beans, and Haricot Beans a certain and considerable proportion should be harvested in a dry state. Unfortunately, not all Peas are equally palatable when eaten dry. Harrison's Glory is said to be a good one. Little Marvel certainly is. If soaked for 24, or better 48, hours and cooked with a little bicarbonate of soda, the latter Pea, within our own experience, makes a good dish. The advantages of soaking previously to cooking are twofold. First, the Peas are softened, and therefore more digestible. Second, and more important, is the fact that when soaked for 48 hours (with an occasional change of water to prevent the growth of moulds and bacteria) the Peas re-develop the health-maintaining vitamines, which disappear during the process of ripening, and hence the well-soaked Peas are more nutritious than are those which are cooked after only a brief immersion in water.

We conclude, therefore, that gardeners with ample space should grow as many Potatos—and especially Second Earlies—and also as many Peas, Haricot Beans, and other leguminous crops as possible. At all events, the present writer is so convinced of the propriety of this course that he is turning his herbaceous borders into "vegetable meat"-producing borders, and intends to plant leguminous food plants in place of the flowers. Add to these measures a couple or more pigs, and the garden should produce enough to supply the household, and hence help to take the strain off the trade supplies.

In the case of the small garden it is not so clear whether the programme just sketched holds, and indeed it is probable that the main space should be devoted to second early and main crop Potatos, Onions (from autumn sowing or transplanted seedlings raised under glass), and the usual green crops, not forgetting the big yielding Parsnip and the accommodating Jerusalem Artichoke.

The big garden could do no better work than devote all the space to be spared to increasing the breadth under Onions. Imported Onions will be scarce, and gardeners with suitable ground can help to supply the shortage.

Reverting to the small garden: the pig, as fat producer, may be impossible; although in this connection it is to be remembered that competent persons claim that household and garden waste combined will suffice to feed the animal. But although impossible in one garden it should be easy for several neighbouring gardens to co-operate in pig-keeping on a small scale—provided that there is someone who understands pig management.

In default of some arrangement of this kind, rabbits and poultry should be tried. The difficulty of obtaining grain for poultry is said not to be an absolute bar to success in poultry-keeping — though here we speak without personal experience, and only on information received. In any case, part of the difficulty can be got over if the open parts of shrubberies and waste garden ground generally—that is, ground not to be used for food crops—is planted with suitable varieties of Sunflowers, the seeds of which when well ripened would be available for poultry.

A point on which some readers may be able to give information is the use of Linseed as food (for human beings or poultry). We are informed that seed of Linseed soaked in water and swollen to a jelly-like consistency forms an excellent basis for soup. If so, its richness in fat might make Linseed worth growing. Lastly, it cannot be urged too strongly that all ground cropped with early food plants should be successionally cropped with garden Beet (for its sugar), and also with Turnips and Carrots, as well, of course, as with the usual Brassicas. Nor should the imperative need of exercising economy in the use of seeds be forgotten. Gardeners can in particular help other small cultivators in this respect by raising seedlings of transplantable plants for distribution in their neighbourhood.

We would welcome on behalf of our readers further suggestions from persons of experience on means to make the gardens of England in the coming year most useful to the country as well as to the owners.

SUGAR FOR JAM-MAKING.—The Royal Horticultural Society has addressed a communication to Sir CHARLES BATHURST, Parliamentary Secretary to the Board of Agriculture, drawing attention to the waste of fruit which will result if, as expected, no extra sugar for the purpose of jam-making is allowed this year to growers of fruit. The Society points out that the refusal of sugar to private fruit growers appears to be based on the argument that to grant it to country growers is unfair to town populations: but the prime requisite is to save the whole fruit crop throughout the country. The suggestion to collect all the small growers' produce and convey it to factories appears to the Council to be impracticable; different dates would have to be fixed for the collection of the different fruits. The sugar grant of last year provided tens of thousands of households with excellent jam, which has been used as actual food, and has released a large quantity of other food stuffs, notably butter and margarine. Finally, the Council points out that anyone possessing a good fruit and vegetable garden can, if he is enabled to make the best use of it, so far reduce his demands upon the public food supply that it is only necessary to encroach upon it so far as meat, bread, and salt are concerned.

DRIED POTATOS IN FRANCE. The French Ministry of Agriculture has issued a leaflet recommending the drying of Potatos for use when fresh Potatos are not obtainable. There are various ways of drying Potatos, but the simplest method, which has been employed for many years by farmers' wives in the Ardennes, is to plunge them in boiling water, peel them, and dry them in the oven. Before use, the only preparation necessary is several hours' soaking in cold water. Besides being useful for human food, dried Potatos can be fed to poultry and other farm animals, thus saving grain stuffs.

A PAPER WEED-KILLER.—An interesting method* of killing weeds in Sugar-Cane fields in Hawaii consists in spreading over the fields, after the dormant canes have been manured, strips of tarred or asphalted felt paper weighing 9 lbs. to the 100 square feet. The protected shoots of the young canes grow through the paper, which is weighted with stones, and the softer-tipped weeds, failing to penetrate it, are smothered. A similar practice has been employed in this country in making lawns. The seed is sown on a treated perishable fabric.

THE GENUS EUCALYPTUS. The thirty-second part of Mr. MAIDEN'S Revision of the genus Eucalyptus treats of seven (Nos. 161-167 closely allied species inhabiting New South Wales and Queensland. E. Blakelyi is here described for the first time, and E. dealbata, of ALLAN CUNNINGHAM, is figured partly from type specimens in the Kew Herbarium. None of the species is of special interest to the horticulturist. E. Seeana is described as a graceful and useful species, ranging from Port Macquarie to Moreton Bay. E. exserta is one of the richest in oil. E. Howittiana was named, by F. MUELLER, after A. W. HOWITT, "the most distinguished citizen Gippsland, Victoria, has produced, who possessed a marvellous first-hand knowledge of various branches of Natural History." His *Eucalypts of Gippsland* is an admirable piece of work. The species in question, which is apparently rare, reaches a height of about 100 feet, with a butt 12 feet in girth.

AUSTRALIAN ACACIAS.—The Acacias of tropical Western Australia form the subject of a most interesting paper by Mr. J. H. MAIDEN, F.R.S., read before the Royal Society of New South Wales on June 6, 1917. A condensed bibliographical summary precedes the systematic section, beginning with WILLIAM DAMPIER, who visited Cygnet Bay in 1688. In 1699 he explored the same coast, as captain of H.M.S. Roebuck, and brought away dried fragments of about a dozen different species of plants, which are now in the Oxford University Herbarium, but there is no Acacia among them. DAMPIER'S small collection was the first sample of the Australian flora brought to Europe. The first specimen, apparently, of a North-west Acacia (A. bivenosa) was brought to Europe by BAUDIN'S expedition in 1804, some 25 years after the first settlements on the East coast. MAIDEN enumerates and discusses 55 species from the "Nor'-west" of Western Australia, but this, it should be explained, does not include the Northern Territory, from which 45 other species are listed. A. delibrata, a very obscure species, has been rediscovered, fully described and figured (partly from CUNNINGHAM'S original specimens at Kew); several new species are described, among them A. Hendleyi and A. Hammondii; and both are figured. A most useful feature in Mr. MAIDEN'S descriptive work is a critical contrasting of the differential characters of allied species.

* *International Sugar Journal*, Oct., 1917.

FIG. 23. STANGERIA PARADOXA: FEMALE PLANT WITH CONE.
(See p. 66.)

PUBLICATIONS RECEIVED.—*Hints for Allotment Holders and Cottage Gardeners.* By George Runyard.—*Productive Plant Husbandry.* By Karv Cadmus Davis, Ph.D. (Philadelphia and London: J. B. Lippincott Co.) Price 7s. 6d. net.—*The Best Book on Gardening.* (London: Temple Press, Ltd.) Price 1s. 3d. net.

ON INCREASED FOOD PRODUCTION.

ALLOTMENTS

THE Food Production Department's scheme intended to add 500,000 more plots to the allotments of the country before the end of March is making good progress. In one week recently about 260 acres of land were taken up for allotments, providing nearly 4,000 new plots. Portsmouth has added 1,000 more plots, Newcastle-on-Tyne 420, Ashington (a mining village) 364, and Port of Blyth (Northumberland) 260. It has been stated that one in twenty of the population of Luton (Beds.) is an allotment holder. This is a high percentage, but at Tenby, out of 900 householders, 450 are said to have allotments.

STRINGLESS FRENCH BEANS.

THE pods of the Stringless French Bean possess a character or property that does not seem to be appraised at its full value. During the past summer I purposely allowed the pods of the Climbing French Bean Mont d'Or to hang on the plants for a fortnight or more after they were fit for use. The seeds were fully formed, and almost as large as the mature ones. Even then the pods were tender and buttery after being boiled whole, with only one slender thread at one of the sutures. The seeds could not but have added nutritive value to the dish. The endocarp is wholly devoid of the cartilaginous membrane which makes other French Beans, and Scarlet Runners in particular, stringy and uneatable if not consumed at the proper time. The early flowers and all others of the French Beans are self-fertilising, and begin setting their fruits as soon as they are developed; whereas Scarlet Runners drop their early flowers in large numbers. After the latter begin fruiting they often give a much greater produce than can be consumed at once, and the result is waste. During the past season many of the pods were left on the plants till brought down by frost and wind. Mont d'Or has chrome coloured pods, but there are green podded varieties, both dwarf and climbing. All the French Beans constitute more tender and delicate food than the varieties of Phaseolus multiflorus, and if the stringless ones were introduced amongst the rest they would provide a succession in the event of a glut of the ordinary type, or, in other words, could be allowed to hang on the plants till the excess of the others was overtaken. *J. F.*

THE BUXTON LIME FIRMS COTTAGE-GARDENS ASSOCIATION.

FEW districts have responded more readily or successfully to the demand to grow more food than has that part of Derbyshire within the scope of operation of the Buxton Lime Firms. These firms employ some 1,500 men, and the problem so successfully attacked was to enable these men to provide themselves and their families—some 7,500 souls—with as much home-grown food as possible. To this end the Association was formed, established allotments, and cultivated in addition about 100 acres of vegetables, the work being done by women under skilled instruction; liberal encouragement was also given to school gardens. As a result some 2,000 tons of food were grown where none grew before.

Furthermore, herds of goats were started in two centres, and members were encouraged to purchase the progeny of the herds on a system of easy payments. Rabbits and pigs were also provided on similar terms.

An enthusiastic account of this notable piece of work is given in a little pamphlet* written by Mr. James Clayton, with the object of showing what large employers of labour can do in the way of setting on foot schemes not only of immediate utility, but of permanent value.

THE CULTIVATION OF ONIONS.

A BULLETIN describing the method of cultivation which has proved successful in the Horticultural Department of the Harper Adams Agricultural College, published by the College, gives details of the cultivations employed, together with illustrations of the crop.

Copies of the Bulletin (No. 1918/1A) may be obtained on application to the Principal, Harper Adams Agricultural College, Newport, Salop.

* "Two Thousand Tons of Food where there was None Before." *High Peak News* Offices, Buxton.

HOME CORRESPONDENCE.

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

NATIONAL UNION OF SCIENTIFIC WORKERS.—It is a commonplace nowadays that science does not occupy its rightful place in the national life, and that the interests of its workers receive too little attention from those who direct the State. The originators of the National Union of Scientific Workers believe that the only remedy is for scientific workers to adopt the form of organisation which experience shows to be the most effective for exercising political and industrial influence. This form is that of the great labour trade unions, and of such professional bodies as the British Medical Association and the National Union of Teachers. A close imitation of the policy of any of these bodies is not contemplated, if only because our needs are different; it is the form of organisation that we propose to follow. The originators of the scheme feel that it would be absurd for them, or for any self-appointed body, to lay down at the outset the constitution or the policy of the union. For the present they are confining themselves to setting up a preliminary organisation which will enable a meeting to be summoned which shall have the authority necessary to decide these matters. Accordingly in the pamphlet (for which all who are interested are earnestly requested to write), the chief part is given to a description of this organisation, although indications are also given of the directions in which it is thought that the actions of the union, when formed, are likely to be most effective. Since the policy of the union will not be settled finally until the preliminary organisation is complete, and the general meeting summoned, we would urge that any divergence from the views expressed by the originators is quite as potent an argument for taking part in the preliminary organisation as complete concurrence with those views. *Norman R. Campbell, General Secretary, North Lodge, Queen's Road, Teddington.*

YEW POISONING.—I am interested in the report of the case on "Yew Poisoning" which appeared in the *Gardeners' Chronicle* for January 12, p. 20, but there are questions that I consider require very thorough investigation, which go much deeper than the legal aspect, and which I have never yet seen exhaustively dealt with, though I have often searched for the facts. The poisonous nature of the Yew seems to be generally admitted. The questions are, what part of the tree, in what state of growth or decay, and to what animals is it poisonous—or are there different species or varieties of Yew? Here is my experience. I have positive knowledge of a field in which there are Yews of all ages, unfenced, and in which horses, cows, and sheep have grazed for many years without any record of injury, on the evidence of our familiar friend, the oldest inhabitant. Experienced men of sound local knowledge have not the slightest hesitation in putting their animals in this field; they scout the idea of danger; but they have never been able to explain their confidence, except from use and wont. Personally, my experience of some Yews has gone far to remove my doubts, which I confess were very active at first, though I have never yet had any satisfactory scientific explanation to relieve them. On the contrary, in the adjacent field are several old and well-grown Yews, which are and have been fenced for many years for the express purpose of protection, and one cannot but believe that this must have been done for good reasons, though I have not been able to ascertain their history. From what I have been able to gather from books, I surmise that the injury is usually due to an internal irritation, caused by the animal eating the dried leaves which have fallen from decayed or lopped boughs into the herbage; but I can hardly believe this is an exhaustive explanation. It is, I believe, admitted, and in my own experience I have observed, that animals will readily eat the young shoots in small quantities without injury, and possibly for some medicinal purpose. But I am bound to believe that there must be some condition of extreme danger, whether it is as above or toxic, or depends on quantity eaten, or the species, sex or age of the tree, or season of the year. Now, what is that condition? I hope that some of your contributors who have made a study of the subject will give us the benefit of their reasoned opinions or reference to authority. Accurate knowledge on all matters connected with the economical use of pasture land is obviously becoming more valuable, and I hope you will consider the discussion of this subject worthy of space in your columns. *Puzzled.*

LITIGATION V. ARBITRATION.—"Why do people bring such a case into a court of law instead of getting an expert arbitrator to settle the matter?" asked a learned judge the other day. As nobody ventured to reply to his Lordship's question it is to be assumed that the riddle is insoluble. The case was an interesting one for suburban gardeners. It appeared that the plaintiff accepted, as monthly tenant for his furnished house, a lady, whose husband was on military service. For many years he had devoted himself to his garden, and after twelve years' effort had created a little pleasaunce entirely secluded from any overlooking. Such conditions naturally necessitate a thick screen of trees and shrubs. Unfortunately, the tenant had a great passion for light and air, and in her view the privacy of the garden was too dearly bought in respect of these desirable aids to health. Therefore, after taking possession of the house, she had an interview with the owner, who listened sympathetically to what she had to say, with the result that the lady came away believing herself at liberty to remove all planting which she deemed superfluous. The landlord, on the contrary, was conscious only of having given permission for reasonable pruning and thinning to be carried out. Those who have practised tree-cutting know how insidious is the appetite for using axe and saw. They will appreciate the fierce joy of a lady who, objecting on principle to trees near a house, finds herself at liberty, as she supposes, to effect what she considers to be an improvement. The consequences may be imagined. The tenancy lasted some seven months, and the owner revisited his home anticipating the delights of a spring garden. When he had last seen his house, which was the oldest in the road, it was as a patriarch among its neighbours. The front was then obscured from public view by the long, leafy growth of years. Imagine his stupefaction at the sight of a staring, clean-shaven front which he had thought never to have seen again. The cherished Thorns and Laburnums and Almonds, the kindly Laurel hedge and other aids to seclusion had disappeared. The door-side Jessamine, daily witness of a thousand farewells and homecomings, was cut to the root, and all that remained was tier upon tier of nails in brickwork bearing tags of cloth. The tragedy of the thing burned into the owner's brain, and excusable indignation leaped into flame. The world's worst tragedies spring from the misunderstandings of honest people, because such are unheld by obstinate conviction of right. The explanations and compensation demanded by the owner of the ruined garden were not meekly met, and legal proceedings were the outcome of the affair. We need not follow out the details of the case. At the end of the first day's proceedings the judge asked if it was necessary to indulge in further expense. He hinted that he thought the lady had exceeded her rights as tenant, although the landlord might have taken more trouble to ascertain her intentions. He thought it was to everybody's interest to settle the matter. The suggestion of the learned judge was accepted by the advisers of both parties. The defendant agreed to pay the sum asked as compensation, each side paying its own costs. The case ended with a repetition of the opening enquiry: "Why do people take such cases into a court of law instead of inviting some responsible authority to appoint an expert arbitrator?" I commend his Lordship's advice to all who are tempted to set foot unnecessarily in the snare of litigation. *Anti-Litigant.*

SOCIETIES.

ROYAL HORTICULTURAL.

FEBRUARY 12.—The one hundred and fourteenth annual meeting of the Fellows of this Society was held on Tuesday last in the Council Room of the Vincent Square Hall. The exhibition, as on the occasion of the last annual meeting, was held in the Drill Hall, Buckingham Gate Westminster. The attendance was moderate and there were few exhibits. Orchids were the principal subjects, and the Orchid Committee recommended three First-class Certificates and one Award of Merit to novelties.

The best exhibit in the Floral section was a group of indoor flowers and Ferns exhibited by Messrs. H. B. MAY AND SONS. The Ferns included a collection of hardy kinds, as well as choice exotics. There were also groups consisting of Primula obconica, Cineraria Feltham Blue, and the scarlet-flowered Columnea magnifica, the latter shown as small specimens in pots, flowering profusely. Messrs. ALLWOOD BROS. showed a collection of Perpetual-flowering Carnations, the selection embracing the newest and best varieties.

The other exhibits in this section consisted mainly of hardy plants, including Alpines. Messrs. H. CHAPMAN, LTD., staged seedling Irises, raised from I. reticulata, I. Danfordiae, and allied species; also hybrid Freesias, two of which received Awards of Merit. The variety Market White is of exceedingly robust habit, and produces large trusses of white flowers of a more regular shape than the type. Saxifrages, coloured Primroses, Crocuses, bulbous Irises, Anemones, Daisies and other spring flowers were shown by several exhibitors. Messrs. R. DICKER AND SONS had delightful little plants in pots of Saxifraga Gloria, S. Grieshachii, S. Faldonside, and others. Another excellent exhibit of these popular plants was shown by Mr. G. G. WHITELEGG. The collection included masses of S. apiculata alba, S. Boydii alba, and S. Boydii Gloria, among the finest of early-flowering Saxifrages. Messrs. PIPERS displayed hardy plants and dwarf shrubs suitable for the rockery. The chief features were dwarf Conifers and hardy Cyclamens. Messrs. J. CHEAL AND SONS' exhibit of Alpines included a dark form of Daphne Mezereum, every tiny plant was crowded with its fragrant flowers. Messrs. W. AND J. BROWN exhibited a group of their double white form of Primula obconica, and new varieties showing a little colour, including Marie Queen and Crepe, a crimped picta. Messrs. BARR AND SONS' exhibit of Alpines included species of Crocus such as C. Tomasinianus purpureus, C. corsicus major and the variety Lemon Queen.

The only award made by the Scientific and Floral Committee was a Silver Knightian Medal for a collection of vegetables staged by Messrs. SUTTON AND SONS.

Floral Committee.

Present: Messrs. H. B. May, (chairman), J. Green, G. Reuthe, J. Hudson, A. W. Meerbeim, C. R. Fielder, W. H. Page, C. Dixon, J. Dickson, E. F. Hazelton, W. P. Thomson, J. Hudson, E. H. Jenkins, J. W. Barr, W. B. Cranfield, W. J. Bean, R. C. Notcutt, F. A. Bowles, S. Morris, W. G. Baker, J. T. Bennett-Poe, H. Cowley, W. Howe, J. F. McLeod, F. P. Roberts, C. E. Pearson, and J. Jennings.

FIRST-CLASS CERTIFICATES.

Iris Cantab (see fig. 50).—This beautiful bulbous Iris gained an Award of Merit on February 10, 1914. It belongs to the reticulata group, and bears pale blue flowers, with a touch of mauve; it has a white ground in the throat, and orange-coloured ridge. The plant is hardy, and is easy to propagate. Shown by Messrs. H. CHAPMAN, LTD.

Hamamelis mollis.—This well-known spring-flowering shrub is a native of China, and was discovered and introduced in 1879. It is considered to be the finest of the Witch Hazels, and is especially valuable in gardens on account of its flowering so early (it is often in bloom on New Year's Day). Shown by Messrs. R. VEITCH AND SON.

AWARDS OF MERIT.

Freesia Snow Lavender.—This Freesia is a delicate shade of lavender, and a pleasing colour acquisition to this popular florists' flower.

Freesia Chrysanthi aurantiaca.—This is quite a contrast to the last-named variety, being rich yellow, with shading of orange colour. Both shown by Messrs. H. J. CHAPMAN, LTD.

Orchid Committee.

Present: Sir Jeremiah Colman, Bart. (in the chair), Sir Harry J. Veitch, Messrs. Jas. O'Brien (hon. secretary), W. Bolton, J. Wilson Potter, R. Brooman-White, Arthur Dye, Frederick J. Hanbury, C. J. Lucas, W. H. White, A. M. Bain, J. Cypher, J. E. Shill, T. Armstrong, J. Charlesworth, S. W. Flory, R. G. Thwaites, F. K. Sander, Walter Cobb, Pantia Ralli, E. R. Ashton, Stuart H. Low, and R. A. Rolfe.

AWARDS OF MERIT.

Cypripedium Leeanum Queen Alexandra (*Leeanum Lowei* × *Fairrieanum*).—A handsome hybrid, raised in the collection of Sir Jeremiah Colman, Bart., Gatton Park (gr. Mr. Collier), and shown by Messrs. J. A. McBEAN, Cheshunt. A beautiful flower, and the first white variety of this popular hybrid. The flowers are of fine substance.

Odontioda Memoria F. M. Ogilvie (*parentage Pescatorei* × *Charlesworthii*).—A handsome hybrid, shown by Mr. Ogilvie, The Shrubbery, Oxshott (gr. Mr. Hurcomb). The Shrubbery, Oxshott—One of the finest of Odontiodas, which, while a quite recent strain, is equal in form and size to a good Odontoglossum. The plant bore a spike of seven large flowers of a rich claret red colour, the white ground tint being only visible in the irregular markings on the segment. The lip is white in front, and the yellow crest has a white blotch with red markings.

Cypripedium Leeanum Lowei × *Fairrieanum*.—Shown by Messrs. J. A. McBEAN, Cheshunt. A beautiful flower, and the first white variety of this popular hybrid. The flowers are of fine substance.

AWARDS OF MERIT.

Odontioda Peetersii (*Charlesworthii* × *Solfatara*).—Shown by Sir JEREMIAH COLMAN, Bart., Gatton Park (gr. Mr. Collier).—A desirable hybrid, with floral segments of a clear dark violet colour and slight white margin and tips. The well-formed lip bears dark purple blotches before the yellow crest, and the front lobe is white.

FIG. 50.—IRIS CANTAB.
(See Awards by the Floral Committee.)

AWARDS.

FIRST-CLASS CERTIFICATES.

Cypripedium Leeanum Shillianum (see fig. 51) (*Hera* × *Lecanum*).—*Hybridist*, shown by Mr. J. E. SHILL, The Dell Gardens, Englefield Green.—A magnificent hybrid, and one of a very remarkable batch raised at The Dell, including The Baroness, which was awarded a First-class Certificate at the previous meeting. The variety Shillianum has a fine white dorsal sepal, with an emerald-green base and heavy claret-coloured blotching changing to rose in the smaller spotting in the upper white area. The petals are the broadest and most flatly arranged of any of the class, and have a yellowish-cream ground tinged with purple on the upper half, and spotted on the lower. The lip is mahogany-red with a narrow yellow margin.

PRELIMINARY COMMENDATIONS.

Odontioda Dora (*Odm. Ainsworthii* × *Oda Schroderi*), from Messrs. CHARLESWORTH AND Co., Haywards Heath.—A perfectly formed flower of a deep bronzy red colour, the lip white with red blotches around the crest.

Odontioglossum Nora (*illust.*), *comm.* *Hort.* from Messrs. ARMSTRONG AND BROWN, Tunbridge Wells.—A beautiful hybrid of rounded form and rich colour, dark red on rose with a very slight silver-white edge to the petals. The broad lip has a white ground, evenly spotted

over its whole surface was [illegible]—a most unusual feature in Odontoglossums.

GROUPS.

Messrs. **Armstrong and Brown** were awarded a Silver Flora Medal for a group of remarkably well-grown and profusely-flowered Odontiodas, Odontoglossums and Cattleyas, including Cattleya Clotho magnifica (Enid × Trianaei), a large and richly coloured flower; Laelio-Cattleya Queen Alexandra, of good form and colour; and Cattleya Trianae alba.

Messrs. **Charlesworth and Co.** were awarded a Silver Flora Medal for a group of Cypripediums, Odontiodas and Odontoglossums. Odontoglossum Cereus (Phoebe × Harryano-crispum) is a pretty novelty, showing pronounced features of O. Harryanum.

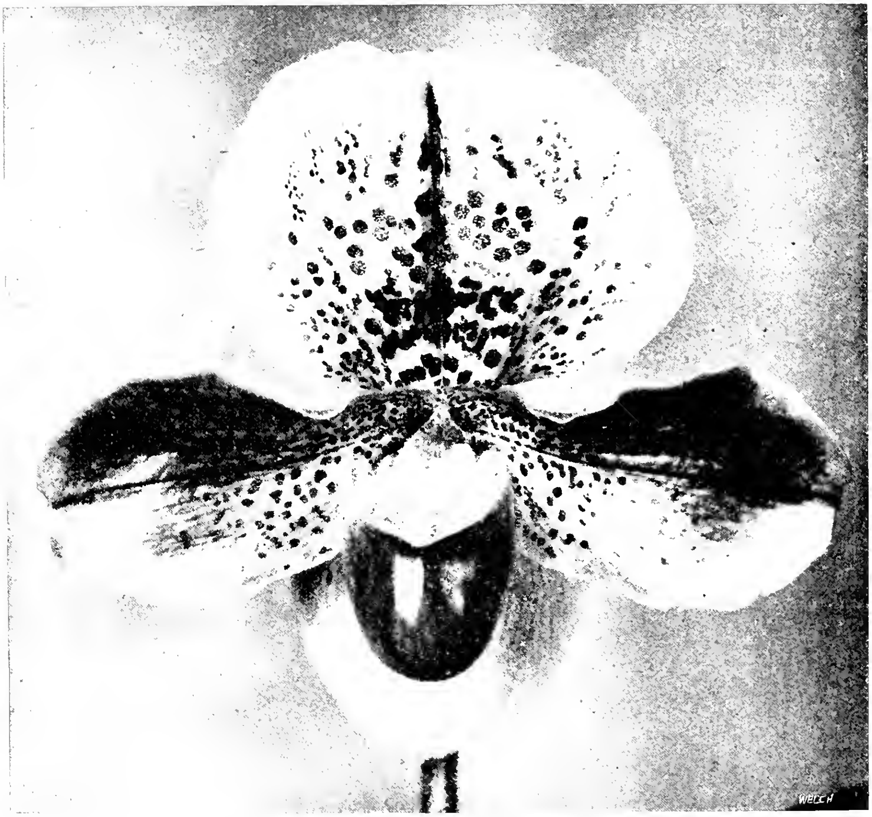


FIG. 31.—CYPRIPEDIUM EURYBIADES SHILLIANUM. NAT. SIZE.
(See Awards by the Orchid Committee.)

Messrs. **J. Cypher and Sons**, Cheltenham, were awarded a Silver Banksian Medal for a group in which remarkable forms of Cypripediums were the chief feature. The best novelty was C. Lloyd George (Boxallii × aureum Hyeanum), a bold flower of excellent form; the basal half of the large, white dorsal [illegible] with feathered lines of [illegible]. The broad petals are like those of [illegible] tinged with purple, [illegible] the lip is of a darker tint. C. Scipio has [illegible] blotched upper sepal.

Messrs. [illegible] were awarded a Silver Banksian Medal for a group of Cymbidiums, including C. [illegible], C. Pauwelsii, and many forms of C. Alexanderi, the two best of which were the pure white variety album and the blush tinted variety Margarita.

Messrs. **Stuart Low and Co.** were awarded a Silver Banksian Medal for a group of finely flowered hybrid Orchids.

Messrs. **Hassall and Co.** were awarded a Silver Banksian Medal for a group of Cymbidiums, the best of which was the new C. Sybil sulphureum, a large white flower with faint yellow shade.

Messrs. **Sanders**, St. Albans, were awarded a Silver Banksian Medal for a group of Cymbidiums, Lycastes, and Brasso-Cattleyas. A pretty novelty in the group was Brasso-Cattleya Orion (C. Enid × B.-C. Mrs. J. Leemann), with a well-formed pink flower.

Dr. **Miguel Lacroze**, Bryndir, Roehampton (Orchid grower, Miss Robertson), showed Sophro-Laelio-Cattleya Meuse Bryndir variety and Cattleya Serbia Bryndir variety, both of good form and colour.

Mr. **Balmforth**, The Shrubbery Gardens, Oxford, exhibited Cypripedium Winsum (callosum Sanderae × Winifred Hollington), a large white flower profusely spotted and tinged with purple.

Messrs. **Flory and Black**, Slough, showed several fine and distinctly coloured hybrid Odontoglossums and Laelio-Cattleya Trident var. ignescens (L.-C. Dinah × C. Trianae Backhousiana), a pretty flower of neat shape, the rose petals showing the reddish feature of C. T. Backhouseana and with well-rounded lip of bright ruby-red colour.

Fruit and Vegetable Committee.

Present: Messrs. J. Cheal (in the chair), W. Poupart, E. A. Bunyard, F. Perkins, A. R. Allan, A. W. Metcalfe, H. Markham, G. Kelf, A. Bullock, F. Jordan, P. A. Tuckett, Ed. Beckett, Owen Thomas, John Harrison, F. R. Ridley, and James Vert.

Messrs. **Sutton and Sons** were awarded a Silver Knightian Medal for a well-staged collection of vegetables of high quality, including Superb Early White Broccoli; New Red Intermediate and Favourite Carrots; Ailsa Craig, Crimson Globe, and other Onions; Prizetaker Leeks; Celeriac; A 1 Kale; All the Year Round Turnips; Savoys, Brussels Sprouts, Corn Salad, and other kinds.

Mr. **James Udale**, Droitwich, exhibited several varieties of late Apples, including Reinette Guise, Reinette Van Mons, and Keddleston Pippin. The last is one of the richest-flavoured dessert Apples, in season from November to March.

ANNUAL MEETING.

The 114th annual general meeting of the Society took place in the Council Chamber at Vincent Square on Tuesday, the 12th inst., at 3 p.m. There was a good attendance, presided over by the president, Field-Marshal Lord Grenfell.

The secretary read the minutes of the last annual meeting, which were adopted, and the president then introduced the report of the Committee. He stated that he and the members of the Council were most grateful for the unvarying support given them by the Fellows. When the war began it was foreseen that some of the Fellows would break away from the Society, and this was found to be the case, but many new Fellows had since joined, and the number was now very encouraging. Seventy-six new Fellows had been admitted at the last meeting. The lessened numbers had, however, made a considerable difference in the revenue from subscriptions, which was £17,000 in 1917, as against £20,000 in 1913. The food-production activities of the Society had been far-reaching in their effects. They had inaugurated a fruit and vegetable production campaign, which had now spread over the whole country, long before the Government had taken any cognisance of the need for such a movement. Further, no letter which has been received at the office of the Society asking for help and information had been unresponded to, though on an average a thousand letters a day were delivered at Vincent Square. The Society had set up a special Food Production Committee, which had given much excellent advice; another important branch of work was the panel of expert garden advisers, lecturers, and demonstrators, on which 2,000 names had been inscribed. Experts were invited to a consultative conference at Wisley in September last, in order that the instruction to be given and the demonstrations and special lectures might be standardised. Besides the personal lectures and demonstrations, a number of lectures had been printed for circulation, and about 3,000 lantern slides had been prepared. A lecture had been arranged at the Mansion House, to be delivered on the 13th inst. by Mr. W. Cuthbertson, on the cultivation of Potatos; and a second lecture of a similar nature would be delivered by Mr. Cuthbertson at Caxton Hall on June 19. On this food production campaign over £2,000 had been spent. Many gifts of seeds and bulbs had been sent to the camps and hospitals in France, and had been most gratefully received. The president had himself visited a hospital at Boulogne where such gifts had proved invaluable. The work at Wisley, both experimental and practical, was still going on well. The laboratory was finished and paid for, and was a very handsome building. Owing in great part to the loyalty and spirit of exhibitors, the Society had been enabled to continue the

fortnightly meetings, and he wished, in the name of the Council, to thank all who thus helped to maintain the quality of the meetings, which had been held for more than a hundred years. The thanks of all were due to Sir Albert K. Rollit for securing the recognition by the University of London of the Degree of Horticulture.

Sir Harry J. Veitch seconded the adoption of the report, observing that he would add a few words on the subject of the financial position. There was one item which was in abeyance, and seemed likely to remain so until the end of the war, and that was the rent which they would receive from the Government for the Hall in Vincent Square, which had been taken over for the accommodation of Australian troops. No arrangement as to remuneration had yet been come to with the Government, but it was hoped that the sum paid would be a considerable one, and would enable the accounts of the Society for the year to show no loss. The Society had issued about 40 pamphlets on different subjects, all of which were much sought after. He would call attention to the fact that there was one slight error in the printed statement. The number of Fellows of the Society was given as 13,259, but it should be 13,851. The number was fast increasing; at the first two meetings of the year more than 200 Fellows were elected, and, as the president had already remarked, 76 were elected at the meeting held to-day. With reference to investments, last year it was resolved at the annual meeting to increase the amount of War Loan stock held by £10,000. This was done, but it was found necessary in the autumn to realise £17,000 of this stock to meet current expenses, leaving £3,000 still held. A slight loss was made over this transaction, but even then the price had been higher than it was at present, and the sale had enabled the Council to pay off an advance which had been made by the Society's bankers, thus freeing the Society from debt of any kind. Altogether, the accounts were in a healthy and satisfactory condition, taking into account the difficulty of the present circumstances.

Mr. R. J. Wallace took exception to the action of the Council in selling the War Loan stock. He considered that the whole £20,000 should have been held, and that in a couple of years it would have been possible to pay off the bank balance and discharge all liabilities.

Sir Harry Veitch, in reply, said that the Council considered it desirable to have a certain sum available in case of any sudden emergency, and they had only sold out sufficient for this purpose. It was true that a small sum had been lost on the transaction, but if it had been carried out later more would have been lost. The Council had wished to end the year out of debt, and so thought it better to pay off the bank debt of ten thousand pounds and start with a clean slate, besides settling an outstanding liability in connection with the Wisley garden.

The report was adopted unanimously.

Mr. C. E. Shea moved that the Fellows record their emphatic protest against the decision of the Food Controller that no sugar be distributed this year to private fruit growers for the purpose of making jam, and approving the memorandum addressed by the Council to Sir Charles Bathurst (see p. 69). The secretary then read the memorandum referred to, and Mr. Shea continued that the Fellows were there to support this action of the Council. It had been admitted that the submarine sinkings of sugar had been rather less serious lately, and that the stocks of sugar in the country were, if anything, larger than they were last year. It was freely said that the large jam factories were getting all the sugar, to the detriment of the private grower and the small fruit-farmer. The plan of collecting all the fruit from the small growers and making it into jam and preserve in central factories was quite impracticable and doomed to failure, and would mean the complete loss of enormous quantities of valuable food. Mr. A. W. Oke seconded the motion, and suggested that the Council send a deputation to the Sugar Controller on the matter. The Rev. G. H. Engleheart supported, and said that although the Society should not offer any captious criticism, yet they should be willing to place their accumulated knowledge and experience at the disposal of the Sugar Controller in this matter. He had noticed in the latest pronouncements emanating from the Sugar Control signs of giving way, and believed that Lord Rhondda was himself sympathetic towards the private fruit-grower. Mr. W. H. Page also supported the motion, which was carried unanimously. The suggestion of Mr. Oke that a deputation be sent was put in the form of a resolution, and carried, the deputation to consist of Mr. C. E. Shea, Sir Albert K. Rollit, Mr. A. W. Oke, Mr. James Hudson, Rev. W. Wilks, and Mr. Owen Thomas, with power to co-opt if desired. At this point of the proceedings the President announced that, owing to Parliamentary duties, he was obliged to leave the meeting, and Sir Harry Veitch took the chair.

Sir Albert K. Rollit moved that a special vote of thanks be passed to the Rev. W. Wilks, who had been a Fellow of the Society for fifty years, and secretary of the Society for thirty years, on that day. Sir Albert referred to the very special and strenuous exertions which had been put forth by Mr. Wilks and his staff during the last three years, owing to the extra work occasioned by the war conditions, and by the fact that it was almost impossible to obtain adequate assistance.

The motion was carried with acclamation.

Mr. Wilks, in replying, said that he thanked Sir Albert and the other Fellows present most heartily for their generous praise, and testified to the loyalty and devotion of the members of the staff, who had certainly worked inordinately hard. The Society was unable to obtain more assistance, and if help had been obtainable they would have no choice to accommodate extra staff. The time must be close at hand when the Fellows would have to look for a new secretary, and he trusted that whoever they chose would be able to get up in thirty years' time and say, as he himself could say, that he had had the happiness of being secretary to the most united and pleasantly conducted Council that could be found.

The chairman then handed the Victoria Medal of Honour to Mr. W. J. Bean, Mr. F. J. Chittenden, Dr. A. B. Rendle, and Sir Albert K. Rollit.

A vote of thanks to be conveyed to Lord Grenfell for his presidence closed the proceedings.

ROYAL GARDENERS' ORPHAN FUND

FEBRUARY 8.—The annual general meeting of the subscribers to the Royal Gardeners' Orphan Fund took place at Simpson's Restaurant, 100, Strand, London, on the 8th inst. Mr. Edward Sherwood presided in place of Mr. H. B. May, who was unfortunately prevented from attending owing to indisposition, and it was agreed that a note be sent him expressing the sympathy of the members, and their hope that he would shortly be fully recovered. The secretary, Mr. Brian Wynne, read the notice convening the meeting, and the minutes of the last annual general meeting, which latter were duly confirmed. The report of the committee for the year 1917, which had been circulated to the subscribers, was taken as read. The following extracts from it refer to the more important items:—

EXTRACTS FROM REPORT OF EXECUTIVE COMMITTEE.

In spite of the indebtedness to the Bank of £800 the Fund is in a healthy condition. The subscriptions, donations and other contributions received during the year have exceeded general expectations, while the working expenses have been considerably reduced. Your Committee would gladly welcome any help towards discharging the debt owing to the Bank.

The 69 Beneficiaries of the Fund were being received at the commencement of the year by 107 children, and, as in the previous year, 16 candidates, all of whom, in accordance with rule, had been receiving half allowances, while voting for election were added to the list at the annual meeting. Nineteen of the children ceased to receive the weekly allowance during the year, and most of them were subsequently given extra grants towards providing an outfit on commencing to earn their own living. These gifts are included in the item which appears in the accounts as "Grants in Aid." The amount disbursed in allowances during the year was £11 5s. less than in the previous year, while grants in aid also show a decrease amounting to £13 13s. 6d. At the ensuing annual meeting the Committee recommend the election by resolution of the 14 candidates.

The special appeal for help to assist the Committee in carrying on the beneficent work of the Fund which was made by the treasurer in May was not quite so successful as in previous years. Your Committee, however, most gratefully acknowledge the gift of £500 from Messrs. Hurst and Sons, an appreciable sum from the treasurer to level up the investment in 5 per cent. War Stock to £1,100, a certificate for a 5 per cent. War Loan Bond from a lady supporter, and generous gifts from Messrs. Sutton and Sons, Sir John E. D. Hawkyns, Bart., Mr. Whitborne Nutting, Mr. R. Gee, Esq., and Miss Flower. Generous subscriptions and donations were also received from Sir Frank Crisp, Bart., Messrs. Rothschild and Sons, and Mr. Ernest Sowerby. Your Committee gratefully acknowledge their continued thanks. The Bournemouth Gardeners' Improvement Society, the Altrincham Gardeners' Improvement Society, the Scottish Horticultural Association, the Dumfries and District Horticultural Society are most cordially thanked for their kindly efforts on behalf of the Fund, as are also the honorary local secretaries, especially Mr. George Carver, Mr. F. Nash, and Mr. W. Rowe, to whose kindly efforts the increased receipts from local secretaries are mainly due.

Your Committee deeply regret to record the heavy loss which the Fund has sustained during the past year by the death of three of its Correspondents, Sir James Whitehead, Bart., Mr. Leopold de Rothschild, C.V.O., and Mr. William Marshall, V.M.H., also a more than usually lengthy list of deceased generous supporters. To the initiative of Sir James Whitehead was entirely due the inauguration of the Annual Dinner, from a comparatively small yet only slightly remunerative function to the series of most successful annual festivals. Mr. Marshall was elected a member of the Committee in 1890, and for the following ten years was annually re-elected chairman. Other valued helpers whose services to the Fund will not soon be forgotten are Mr. Arthur T. Ware, whose gifts of flowers so often helped to adorn the tables at the Annual Festival, Mr. John Margetson, Mr. George Bunt, Mr. Thomas Jeffreys, Mr. H. Richardson, Baron de Sonnebelhe, M. Philippe L. de Vilmorin, Mr. James Hudson, Mr. A. F. Vinden, and Mr. A. McVinish.

The members of the Committee who retire by rotation are Mr. W. Bates, Mr. W. H. Divers, Mr. C. Dixon, Mr. J. McKerchar, Mr. H. B. May, Mr. J. W. Moorman, Mr. W. Nicholson, and Mr. George Reynolds, all of whom offer themselves for re-election.

Mr. Reader, your Committee deeply regrets, cannot see its way to continue to act as one of the auditors, owing to the pressure of other engagements. He therefore has to ask to be relieved on and on his retirement the Committee desires to place on record its high appreciation of his past services. Mr. W. A. Bilney, J.P., has kindly consented to fill the position vacated by Mr. Reader, and the committee has very great pleasure in recommending his election.

THE ROYAL GARDENERS' ORPHAN FUND.

CASH STATEMENT FOR THE YEAR ENDING DECEMBER 31, 1917.

RECEIPTS.

		£ s. d.	£ s. d.
To Subscriptions:	General	205 15 0	
	Local Secretaries	50 4 6	
			255 19 6
,, Donations:	General	176 10 11	
	Local Secretaries	20 4 0	
			196 14 11
,, Response to Special Appeal			605 2 6
,, Legacies:	Mr. N. N. Sherwood, J.P.		500 0 0
	Mr. Robert Tait		50 0 0
,, Dividends on Stock			396 1 10
,, Income Tax returned			30 14 11
,, Loan from Bankers*			600 0 0
			2,634 13 8
,, Balance last Account			379 13 4
			£3,014 7 0

EXPENDITURE.

		£ s. d.	£ s. d.
By Allowances to Orphans		1,557 10 0	
,, Grants in Aid		95 2 6	
,, "Emma Sherwood Memorial"		13 0 0	
,, "Maybud Campbell Fund"		13 0 0	
,, "James Campbell Fund"		13 0 0	
			1,691 12 6
,, Secretary's Salary			200 0 0
,, Rent, Insurance, Firing and Lighting, &c.		36 10 3	
,, Printing and Stationery		29 1 10	
,, Advertising		2 5 6	
,, Annual General and Committee Meetings		19 5 7	
,, Postage		36 18 8	
,, Bank Charges, Interest, &c.		32 10 9	
,, Petty Cash Sundries		5 14 9	
			156 10 4
,, Purchase of £19 10s. 11d. 5 per cent. War Stock			18 11 5
,, Loan from Bankers repaid			550 0 0
			2,616 14 3
Balance: Cash at Bank		394 19 4	
Cash in hand		2 13 5	
			397 12 9
			£3,014 7 0

Having inspected the Securities and examined the Books and Vouchers supplied to us, we hereby certify the above Account to be correct.

PETER B. BARR,
FRANK READER,
Auditors.

January 18, 1918.

*The indebtedness to the Bank on December 31 amounted to £800.

NOTE.—INVESTMENTS

3 per cent. London [illegible] Consolidated Stock	£7,210	15	10
3 per cent. Canada Stock	2,000	0	0
L. & N.W. Railway 3 per cent. Preference Stock	340	0	0
Great Indian Peninsula Ry. Guaranteed 3 per cent. Stock	514	0	0
Metropolitan Railway 4½ per cent. First Debenture Stock	570	0	0
5 per cent. War Stock	800	0	0
"Thomas Moore Trust"—			
East Indian Railway £100 Annuity (cost £14, [illegible])	430	11	0
"Emma Silk [illegible] Memorial"—			
Metropolitan Water Board 3 per cent. Stock	516	15	11
"Maxwell Orphan Fund"—			
Metropolitan Water [illegible] per cent. Preference Stock	391	0	0
"James [illegible] Fund"—			
[illegible] per cent. Stock	300	0	0

The Chairman, in moving the adoption of the report, said that the overdraft at the bank of £600 was in consequence of the adverse conditions brought about by the war. The special appeals had not brought in as much money as was hoped, and had not compensated for the omission of the annual festival dinner. The fund had received two legacies during the year, but it behoved everyone to make a great effort to help to clear off the overdraft and get the Fund once more on its former sound footing.

Mr. Poupart seconded, remarking that it was something to be thankful for that the Fund, though short of money, was able to continue its good work. The report was adopted.

Mr. Poupart then moved that the resignation of Mr. Frank Reader, one of the auditors, be accepted with great regret, and that he be thanked for his past services. This was seconded by Mr. J. W. Moorman, and adopted.

Mr. J. McKerchar moved that Mr. W. A. Bilney, J.P., be elected auditor in place of Mr. Reader. This resolution was seconded by Mr. Leech, and carried.

Mr. J. F. McLeod then moved that Mr. Edward Sherwood be re-elected treasurer, and thanked for his past services. The resolution was seconded by Mr. J. W. Howe, and carried unanimously. Mr. Sherwood replied briefly, expressing pleasure at his re-election, and avowing that there was very little work connected with his office, though there was at times a certain amount of anxiety as to the state of the funds. Mr. McLeod moved that the retiring members of the committee, namely, Messrs. W. Bates, W. H. Divers, C. Dixon, J. McKerchar, H. B. May, J. W. Moorman, W. Nutting, and George Reynolds, be re-elected *en bloc*, which was unanimously agreed to.

Mr. Sherwood moved that Mr. Brian Wynne be re-elected secretary at a salary of £200 per annum, remarking that the members of the committee had the greatest confidence in Mr. Wynne, and felt that they could not have a secretary who had the interests of the society more at heart, or who was more zealous in its service. The motion was unanimously carried, and Mr. Wynne made a suitable reply.

Mr. Sherwood then moved that the fourteen candidates before the committee should all be placed on the funds. Their names are as follows:—Chilton, James Harold; Dodd, Margaret; Haslett, Albert Victor; Haslett, Frederick Ian; Hobbs, Rose Mary Grace; Hubbard, Kathleen; Hubbard, Stanley; McCallum, Alan Fielder; McCallum, Gladys Edith; Reeve, William Herbert; Robinson, Charles Kenneth; Robinson, Victor; Sleigh, Daniel James; Sleigh, Mary Elizabeth. This was unanimously agreed to. The chairman announced that he had received a letter from a lady, Mrs. Ward, offering the sum of £15 a year for the support of the candidate Victor Robinson, and enclosing £12 for the remainder of the present year. It was agreed that the offer be accepted, and that a letter of thanks be sent to the donor. A letter had been received from Mr. H. B. May thanking Mr. Sherwood for taking the chair in his place, and for his labours as treasurer of the Fund. A resolution to this effect was proposed and carried, and Mr. Sherwood replied that it had been a great pleasure to preside over the meeting, though he hoped that on the next occasion Mr. May would be well enough to be there himself. The Fund was a subject very near his heart, and he trusted before very long to see it again on its former sound footing.

CROPS AND STOCK ON THE HOME FARM.

SEEDS FOR SPRING-SOWN CROPS.

Owing to various causes, and especially unfavourable weather at the time of harvesting seed last summer, there is likely to be a scarcity of some kinds of seeds.

I would strongly advise that all orders should be placed in the hands of seedsmen at once to ensure the best delivery possible.

With a view of assisting the inexperienced I give the quantities required per acre in their various sections for spring sowings.

Turnips and Swedes 2 lbs., Mangold 8 lbs.; Clover (Broad Leaved) 15 lbs.; Italian Rye Grass, when sown with Clover to increase the yield of hay should be used at the rate of half a bushel per acre. If sown as a crop of green grass for sheep when weaning lambs, for which purpose it is excellent, 1 bushel per acre will be required. Trefoil, or suckling Clover, more commonly known as Black seed, which is useful for mixing with Italian Rye Grass for sheep food or hay, should be sown at the rate of 6 lbs. per acre. Spring or winter Vetches, 2 bushels; Maize 1 bushel when grown for milk cows, of the Horse-tooth variety.

Rape, when sown broadcast, 6 lbs.; when drilled 4 lbs.

Sugar Beet, 6 lbs.

Onions, 8 lbs.

Trifolium, when sown on rich soil, 20 lbs.; on moderately rich soil, 30 lbs.

Barley, 3 bushels.

Oats, 4 bushels (sometimes 5 bushels are used).

Cabbage for cattle if transplanted, ½ lb.; if drilled for permanent growth, 3 lbs.; Carrots, 7lbs.; Parsnips, 7 lbs.; Lucerne, 20 lbs.; Peas, 3 bushels.

Potatos, 14 cwt. of tubers weighing from 1 oz. to 2 oz. each.

Sainfoin, 4 bushels.

ONIONS.

The most suitable soil for Onions is a deep, stiff loam. Where convenience exists the plants should be raised in cold frames, sowing the seed in boxes early in February, hardening the seedlings thoroughly, and transplanting them 4 inches apart in rows made 1 foot apart in April. The earlier germination of the seed under glass assures a quicker growth, and the plants escape attacks of the Onion fly. If not already done, no time should be lost in manuring and ploughing the land, following with a subsoil plough to ensure deep cultivation. A second ploughing crosswise early in March will improve the tilth for planting and the sowing of seed in the open.

EARLY GRASS.

Italian Rye and Trifolium incarnatum are making rapid growth. Remove all Docks and well roll the plot to press stones below the reach of the grass-cutter as well as solidifying the soil about the roots of the grass, which, after frost, is often loose and not in favour of free growth.

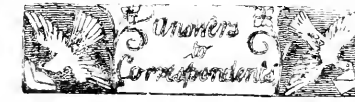
Where the grass is pale in colour sow evenly over the plot 1 cwt. sulphate of ammonia per acre, or 3 cwt. of superphosphate of a strength not less than 30 per cent.

STIMULATING THE WHEAT CROP.

If there is any suspicion that the land is not in good heart to carry the Wheat crop to a successful issue, and the plant appears weak, sow 1 cwt of sulphate of ammonia per acre during the present month. *E. Molyneux.*

Obituary.

THOMAS WILSON.—We regret to record the death, on the 24th ult., of Mr. Thomas Wilson, for some twenty years gardener to Lady Strathmore at Glamis Castle, Forfarshire. His death was due to the after-effects of an operation which he had to undergo last November. Deceased was a skilful gardener, and designed and laid out several portions of the gardens at Glamis Castle. He was also entrusted with the laying out of Lady Strathmore's gardens at Inchdownie Cova. He leaves a widow, one son, and three daughters.



MOSS ON LAWN: *I. M. T.* The fact of the soil of your lawns being sandy, and getting very dry in summer, would not account for the presence of the moss. It is probable that the subsoil is improperly drained, and that water, although it percolates quickly through the surface, collects and stagnates just below. Your first step, therefore, should be thoroughly to drain the ground. Endeavour to favour the growth of the grass by applying a nitrogenous fertiliser, such as sulphate of ammonia, in the spring. Apply it at the rate of about 1 oz. to the square yard, at intervals of a few weeks.

NAMES OF PLANTS.—*Correspondents not answered in this issue are requested to be so good as to consult the following number.*

Conifers, Co. Longford. All seedling forms of Cupressus Lawsoniana, which is a very variable plant, hardly any two being exactly alike in a bed of thousands of seedlings. A number of the more distinct forms have received varietal names, but your plants are roughly typical of the species, though No. 1 is very near var. pendula.

POTATOS DISCOLOURED: *W. S.* The tubers are affected by the disease known as "sprain," an obscure complaint which causes discoloured rings inside. It does not affect their cooking properties or taste, and "sprained" tubers may be used for seed, but you will scarcely require to use them for this latter purpose.

PRIMULA MALACOIDES: *J. W.* So far as is known, the foliage of Primula malacoides does not cause skin irritation, as in the case of P. obconica.

ROAD SWEEPINGS AS MANURE: *C. A. O.* If you are sure that the road sweepings are free from tar, petrol, and motor oil, you should scatter the manure on the ground. Leave it to dry thoroughly, and then rake out of it all the sticks and paper into a heap and burn them. If, however, you have reason to think there is petrol in the mass, make it into a compost as you suggest. Place it in a heap with a fork, and get out of it with the fork as much of the paper and other useless material as possible.

SUNFLOWERS: *C. W. M., Morpeth.* The average yield of Sunflower seeds in Russia, where they are extensively grown, is about fifty bushels of seed to the acre. As a general rule, 100 bushels of seed will yield thirty-three bushels of kernels. The average yield per head varies, and it would not be difficult to experiment on a small scale to arrive at the yield to be expected in this country. For the production of Sunflower oil, the Russian Sunflower, a large-seeded variety, pr ducing a single head, is the best, but for kernels, which are largely eaten in Russia, the small-seeded kinds are grown.

TOMATOS: *T. G.* Tomato seeds should be sown in a compost consisting of one-half loam and one-half leaf-mould or manure from an old Mushroom-bed. The seeds should be dibbled in separately, 1½ inch apart and ¼ inch deep. From your description of the seedlings, it is evident that you are keeping them in too damp and close an atmosphere; they need plenty of ventilation. Pull out the seedlings which have "damped off" and sprinkle sand and powdered charcoal on to the space where they have been; then place the seed pan on a high shelf near the roof-glass of the house where they are growing, so that they may be in a dry place and receive the maximum of light.

VAPORISER: *C. L.* The article you mention can be used for the fumigation of all plant houses where the plants are liable to attacks of mite or red spider. The address is Lund Street, Cornbrook, Manchester.

Communications Received.—J. A. P.—L. S.—L. H.—J. O.—J. R. B.—C. W. H.—Mrs. A. (thanks for 2s. 6d. for R.G.O.F. box)—H. A. D.—B. W. F. F.—L. J.—W. S.—E. B.—J. B.—S. B.—A. J. P.—C. N.—E. C.

THE
Gardeners' Chronicle
No. 1636.—SATURDAY, FEBRUARY 23, 1918.

CONTENTS.

ILLUSTRATIONS.

EARLY SPRING FLOWERS.

IT is astonishing how quickly the earliest spring flowers respond to a slight rise in temperature after a spell of cold weather. From the middle of December to the middle of January the soil was almost continually frozen on the surface. On January 14, and again on January 17, we had three or four inches of snow, and yet on the 27th four different Irises and nearly twenty different Crocuses were in full flower in the open.

The first Iris to appear was I. histrioides. The true plant comes from the neighbourhood of Amasia, in Northern Asia Minor, and large flowers measure over 4 inches across, while the blade of the falls is just over an inch in breadth. The colour is generally a deep blue of the shade that the Repertoire de Couleurs calls steel-blue (230, I.), though in some flowers the colour is distinctly paler. The centre part of the blade is blotched with this colour on a white ground, and there is a central, raised ridge of orange. This Iris seems to succeed in the light sand of my garden enriched with leaf-soil and old manure better than most of the other members of the reticulata section. The bulbs should be lifted and replanted after a short interval every few years, or whole colonies sometimes fall victims to disease and die outright.

The next Iris to appear was a southern relative of histrioides of a distinctly redder shade of purple, with falls curiously mottled with two shades of the same colour. It is one of the many forms of this iris which come from further south in Asia Minor, and which are usually supplied by the trade as histrioides instead of the true plant. These forms are neither so large nor so sturdy as the type, but they respond to the same treatment and are very welcome early in the New Year.

On January 27 the first flower of I. Rosenbachiana (see fig. 32) appeared, with its astonishing combination of white and crimson and gold. Like most Turkestan Irises, it seems to like this sandy soil, and for some years now I have been able to save seeds and raise seedlings annually. I like, if possible, to grow the plants in a cold frame which is kept closed in summer and uncovered all the winter, until the flowers appear. Then for a month or more there are always flowers to be seen, for strong bulbs send up three flowers in succession.

The fourth Iris was a remnant of a batch of hybrids of I. Bakeriana and I. reticulata which gave me some exquisite little plants, most of which, I am sorry to say, I have lost through inattention and lack of time since 1914.

Early Crocuses have one advantage over early Irises. Once an Iris flower has expanded, it remains open and a prey to any vile weather. It is, therefore, best to pick the buds and stand them in low bowls filled with damp sand. Crocuses, however, open to the sun, but close when the sun

FIG. 32.—IRIS ROSENBACHIANA. See text.

goes in and keep their flowers unspotted until the sun shines again.

My earliest Crocus, with golden yellow flowers, is apparently the C. Olivieri of Gay, according to Maw's monograph. It is remarkable for its broad leaves, which appear with the flowers. Crocus Imperati, with its pinkish-purple flowers and striped backs to the petals, was out even before the snow came, but its mill-white albino form with a golden base waited for the disappearance of the snow.

The great disadvantage of Crocuses is that they can only be distinguished by rooting up the plant and inspecting the coats of the corm, and by pulling the plant to pieces in order to count its real and basal spathes. Thus I have at present three or four golden-flowered Crocuses which I hesitate to name, though I suspect them of being forms of C. aureus. C. gargaricus is even deeper in colour; and a form of C. Balansae, which I owe to the generosity of Mr. Bowles, has three golden inner petals, but the outer three so heavily coloured on the exterior as to be a deep mahogany. The contrast is very striking.

C. chrysanthus is easier to identify, though the colour of its flowers is usually not golden. The distinguishing mark is to be found in the black tips of the base of the anthers. This feature is present in the true butter-yellow form that Van Tubergen named after Mr. Bowles, and also in the Leeds's variety, Bullfinch, which has white flowers heavily veined externally with dark grey.

The species of C. biflorus are very numerous, and one of them is known as the "Scotch" Crocus. Others are pure white when open, but have beautiful blue-grey backs to the petals.

All of these Crocuses are of the easiest possible cultivation in well enriched light soil, but they must have a sunny position, where they have the best chance of opening whenever the sun does favour us in January and February. *W. R. Dykes, Charterhouse, Godalming.*

ORCHID NOTES AND GLEANINGS.

ODONTIODA MEMORIA F. M. OGILVIE.

THE hybrid Odontioda illustrated on p. 81, fig. 35, of which the parentage is unfortunately unrecorded, was awarded a First-class Certificate by the Orchid Committee at the meeting of the Royal Horticultural Society on the 12th inst. The plant is a worthy representative of the excellent cultivation and fine quality of the Orchids acquired by the late Fergus Menteith Ogilvie, Esq., and is well worthy of its place in this important collection.

CYMBIDIUM SHILLIANUM.

FLOWERS of Cymbidium Shillianum, a cross between C. Holfordianum (eburneum × grandiflorum) and C. Pauwelsii 'The Dell' variety, are sent by the raiser, Mr. J. E. Shill, from The Dell Gardens, Englefield Green. They are large and of wax-like substance, showing much of C. eburneum in the clear white, for the green tints of both C. grandiflorum and the C. Lowianum in C. Pauwelsii are entirely eliminated. The only colour in the flower is a pale yellow shade at the bases of the petals and on the column, and rose-red blotches inside the margin of the lip. A line of rose-red also runs from the crest to the front of the lip. Hybrids of its class are now very numerous, and there is a certain resemblance between the results of some different crosses, but all vary in some respects.

ODONTIODA BRADSHAWIAE.

WE have received from Mr. Balmforth, gardener to Mrs. Ogilvie, The Shrubbery, Oxford, a very singular abnormal development of flowers of Odontioda Bradshawiae (O. crispum × C. Noezliana), in which three joined flowers present a seemingly double bloom 4 inches across and bearing some resemblance to a decorative scarlet Dahlia. The flattened pedicels joined together disclose the amalgamation of three flowers on one stalk, which carries on the joined columns, each with its more or less perfectly formed labellum, into the centre of the flower. From the centre spread in tolerably regular order the fifteen segments forming the sepals and petals of the flowers, and most of these are fully developed. The scarlet ray of segments bears the yellow crests of the lip, one of which is quite perfect in the centre.

ODONTOGLOSSUM CRISPUM JOHN HARTLEY.

A FLOWER of this fine Odontoglossum, which secured a First-class Certificate at the meeting of the Manchester and North of England Orchid Society on the 7th inst., is sent by John Hartley,

Esq., The Knowle, Mobberley, Cheshire. The variety is one of the most beautiful forms of O. crispum which has yet appeared, and is of the same class as O. crispum Ashworthii, for which the Davidson Cup was awarded at the Chelsea Show of the Royal Horticultural Society, May 25, 1915. The variety John Hartley has nearly equal sepals and petals, which expand to 3 inches in width. The ground colour is white, tinged with yellow from the colouring on the reverse side, but the greater part of the surface is covered with ruby-red blotches, the tint of which is heightened on the well-displayed fringed petals. The lip is white, with a fringed margin, and there are red-brown blotches around the basal yellow crest. The segments, as in many other highly developed forms of O. crispum, is dorsally inclined to be upper-side.

CATTLEYA TRIANAE.

MR. WILLIAM PLACE, Wildespool, Warrington, sends two fine spikes of flowers taken from plants of an importation of Cattleya Trianae. The colour in one of the variable and widely distributed species, with pale lilac sepals and petals and purple-fronted lip. The other flower exhibits quite new features for the species, and is in effect intermediate between C. Trianae and C. Mendelii. The sepals and petals are tinged with rosy lilac, with fine white veining. The lip, which is more elongated and crimped than in ordinary C. Trianae, is rose-purple in front and lighter in tint at the base and edges of the side lobes, the prominently distinct feature being a closely arranged series of yellow branched lines running from the base to the front lobe, and two pale yellow patches, one on each side of the opening of the tube.

RHODODENDRON PARVIFOLIUM.

RHODODENDRON PARVIFOLIUM (see figs. 33 and 34) is, in the mild days of early and mid February, a very valuable plant. In the Cambridge Botanic Gardens the plants grow nearly 5 feet high and are covered with little clusters of from four to six bright rosy-purple flowers. The species is described by Mr. Watson in *Rhododendrons*, Present Day Gardening Series, as an erect, ericate shrub, with leaves oblong, scaly, green above, rusty beneath, ½ an inch long. They are slightly aromatic when crushed, and the plant is evergreen. The flowers are ½ to ¾ inch across, and suggest those of R. anthopogon, but that, perhaps, is chiefly because of a similar colour. In the Edinburgh Botanic Garden the practice is to peg down the stems and cover them with soil, when they root into it and produce a much better furnished specimen than is otherwise possible. The species is allied to R. lapponicum, illustrated in the *Botanical Magazine*, tab. 3106, but it differs in the stamens, the filaments of which are hairy at the base, and the growth is not procumbent. R. parvifolium makes a good companion to R. praecox, which is already swelling its buds, and preparing to succeed a while later. It is flowering here with R. dauricum, which is said to be earlier, and resembles R. praecox to a great extent, but differs in smaller flowers and in not being erect. It is a native of Siberia, Korea, etc., and is perfectly hardy. For the photograph from which the illustration was prepared I am indebted to my foreman, Mr. F. G. Preston. *R. Irwin Lynch.*

FIG. 33.—RHODODENDRON PARVIFOLIUM IN THE CAMBRIDGE BOTANIC GARDEN.

TREES AND SHRUBS.

HAMAMELIS MOLLIS.

THE history of this beautiful Witch Hazel, which was awarded the R.H.S. First-class Certificate on the 12th inst., is interesting. The species was discovered and introduced in 1879 by Charles Maries when travelling in China on behalf of Messrs. James Veitch and Sons. Plants were grown in the Coombe Wood nursery of the firm for twenty years or so without attracting particular attention. Eventually the late Mr. George Nicholson, of Kew, brought the shrub prominently into notice, and there was soon a considerable demand for Hamamelis mollis, as the beauty of the older kinds of Asiatic Witch Hazel had by that time led to their being extensively planted. Though all the species are beautiful, H. mollis is generally regarded as the finest. It is remarkable that a large number of winter or very early spring flowers are yellow. For example, besides this Hamamelis we have Barberries, Forsythias, Jasminum nudiflorum, the Winter Aconite, Narcissi, and Crocuses, all with yellow blossoms. *W. T.*

FLORAIRE, GENEVA.

ONE hot day at the beginning of last July found me knocking at the door of the simple little home of M. H. Correvon, the friend of all true flower lovers, who gives the warmest of welcomes to anyone from England. His house faces the Alps, and, hidden in the blue depths of the mountains, is his Alpine garden, which, owing to the exigencies of war-time, few can now visit but himself, and he but rarely.

His home garden -Floraire—was a riot and tangle of colour.

Close to his door, and creeping everywhere, was little Heeria elegans, a large-flowered Mexican plant of grey magenta, and a long "dry wall" was covered with the pale blue Borago, showing to greatest advantage so grown. Here also was Stachys corsica, running or creeping everywhere, with white flowers; Androsace foliosa, pinky-white; a Saponaria from Cyprus, and everywhere was Acantholimon venustum, a mass of rose-pink flowers 6 inches high. Here, too, was the lovely Lavatera maritima—pink, with grey foliage. This, with Teucrium orientale, Oenothera caespitosa, and Eryngium florairiense appealed to me more forcibly than anything else for beauty of colour and for decorative purposes. The Teucrium, with lovely deep mauve little flowers like Linaria, was of graceful branching upright form 12 inches high, and deeply cut and greyish foliage. The Oenothera was growing magnificently, the pink flowers deliciously scented, while the Eryngium was the result of crossing E. alpinum and E. Bourgatii, of much finer purple colouring than we usually see in Eryngiums, and which M. Correvon secured in his wanderings. Near to the dry wall was the Opuntia collection—not in bloom, and altogether too prickly and learned for me, but a Scabiosa Pterocephala near by I admired much. A shady alley was bordered by rampant, headstrong Clematis vines. One called Mdme. Julia Correvon originated in the

garden, with velvety crimson blooms 2 inches across.

At Grenoble M. Correvon had found an Astragalus, with Vetch-like leaves 12 inches long, of a bright green, and pale yellow, fuzzy-headed flowers, rather like a Phlomis, but in heads, not whorls. It made a strikingly handsome and spreading plant for a specimen bed.

Morina longifolia had prickly and Acanthus-like foliage with a delicious scent of lemon, and long spikes of pale pink and white flowers in whorls. Rudbeckia maxima, with large pale yellow flowers and very glaucous leaves, was very showy.

Campanula alliariaefolia, with single white flowers, was shown off well by a background of blue Anchusa seedlings, and Campanula persicifolia, in a double variety, was exceedingly pretty, the doubling having turned the bell into a flat flower with four rows of petals, and it had not been spoiled by the doubling, as is usually the case. Next to it was the rare Linum hirsutum, growing 18 inches and 2 feet high and very beautiful.

Pontederia cordata, an aquatic with many spikes of flowers, was attractive, and so was a Cherry tree, Bigarreau jaune. I have said before it was a hot day; the fruit was yellow and very sweet and refreshing, and it is the one Cherry in Switzerland that the birds will not touch. I think it would be worth trying in this country to this end. Pentstemon Digitalis was very charming pale pink flowers with yellow and brown tracery inside, and woolly buds.

A long border of Gentians must have been a wonderful sight when the flowers were at their best. There were still a good many in bloom at the time of my visit. Among them were Gentiana phlogifolia, flowers of richest blue, with Phlox-like leaves; G. Wahlbergi, G. tibetica, G. dahurica, and G. Cruciata.

Here I was obliged to tell him of the exquisite little Gentiana Farreri that Professor Balfour had shown me at Edinburgh, flowering in the rain instead of shutting up, like all other well-conducted Gentians do in wet weather. Dianthus Courtoisi I specially marked. A hybrid, found by M. Correvon at Davos, it grows 1½ foot high even in dry soil, and is rose-pink in colour. One of the gems of the garden was Viola flourieriensis, a mauve hybrid obtained by crossing two Alpine species. The plants I saw had flowered without ceasing for five years in the same place; they are never without bloom from January 1 to December 31. This should be a very valuable plant in English gardens, and I hope to grow it, together with the new rose-colored Primula flourieriensis "Sugelia mooreanda" was very pretty, the blooms dark crimson with golden lips.

M. Correvon waxed enthusiastic over some beds arranged for sub-irrigation. "These," said he, in his quaint English, "are what I call my 'love beds,' and alone are my great treasures." However, there was little show, but had I been earlier I should no doubt have waxed enthusiastic also.

I saw the rare, tiny Rosa berberifolia; a Peganum with a pretty little white flower; Inula ensifolia, from Trieste; Hypericum Coris, pretty, neat foliage and small yellow flowers; Stachys glutinosa, a small plant or herb with insignificant little white flowers, and exquisitely scented when the leaves are bruised; Valeriana flourieriensis, whitish; Dioscorea caucasica, a rare and elegant large-leaved climbing plant; Astragalus alopecuroides; Digitalis lanata and Genista horrida, a dwarf plant like a tiny Spanish Broom, end my list of plants that specially interested me. Space forbids my mentioning the herbaceous plants, flowering so vividly in that sunny spot, where two varieties of the Matilija Poppy were blossoming as profusely as if this were California! I have written too much, but a charming note from M. Correvon to-day, enclosing me some Viola flourieriensis seed, has set me delving into the recesses of my memory and my note-book, while guns are firing all over and round my house, an air raid being in progress. It is well that we have pleasant memories to look back on, even amidst the clatter of shrapnel and the booming of the guns.—*Alpe Mercantour.*

THE ALPINE GARDEN.

SAXIFRAGA BURSERIANA MAJOR.

WITH the dawning year one begins to look forward to the flowering of Saxifraga Burseriana major. It is, with me, generally the earliest of the Burseriana varieties, of which we have two or three. It has often bloomed in January and February, sometimes to its own undoing, as in severe frosts its white flowers have been ruined, while sleet, rain, and snow have also attacked it to its disfigurement. It is, therefore, worth while to give the plant protection. A cloche or bell-glass, tipped on one side to admit air, is helpful, and even a sheet of glass, just a little elevated above the flowers, is a sufficient safeguard. This shelter should be placed over the plants in good time, as even the dainty red buds, thick set on the charming grey, spiny foliage, like a rough carpet, will suffer in severe weather.

FIG. 51.—RHODODENDRON PARAVOLUM: SHOWING FLOWERS AND FOLIAGE, NATURAL SIZE.

(See p. 76.)

MORISIA HYPOGAEA.

MORISIA HYPOGAEA is a small plant in point of stature, but often grows into a spreading tuft of curiously cut polished green leaves, with good-sized, bright yellow flowers. This Alpine likes a poor, gritty soil, as it becomes too big and untidy-looking in rich compost. I have always found that it does best in full sun, and in soil where rain drains away rapidly. It has a curious way of resenting [illegible] in some gardens, and of bidding fair [illegible] but in most cases it may be [illegible] which are "easy" to [illegible]

CAMPANULA RADDEANA.

CAMPANULA RADDEANA, which comes [illegible] Caucasus, is easily increased by division, and soon spreads to a moderate degree without becoming woefully aggressive. I am not aware if seed is produced and ripened, but they may probably be [illegible] by specialists in such plants.

In [illegible] conditions this Bellflower never fails to give satisfaction. Grown in a soil not too heavy nor of a poor, dry character, it will give every satisfaction, and prove a permanent [illegible] of the rock garden or rockery wall. There it will give perpetual pleasure with its fine racemes of wonderfully large, drooping, deep blue bells, the little elevated above its carpet of small, glossy, prettily crenated leaves. I think it [illegible] semi-shaded place.—S. ARNOTT.

AUSTRALASIA.

NOTES ON VICTORIA.

IN VIEW of the post-war emigration intended by some of our men, the following may be of interest and service to such as are thinking of Victoria as their future home. This State, with its area of 80,000 square miles and its 1,400,000 population, is by far the most developed of the six States which together form the Commonwealth of Australia. Thus the area remaining of virgin Crown lands is not large, and, for the most part, consists of heavily timbered country, or areas but recently opened up by roads and not yet served by railway.

But in most of the districts already well settled, and served with every convenience for transport, the Closer Settlement Board has purchased large estates, and by judicious sub division has made available for selection land already in full production. This land is in blocks varying in size according to the district and capabilities of the soil, thus, close to large centres of population, where an assured market is at hand, there are 10 to 25 acre blocks suited to poultry raising or market gardening. In the country districts there are blocks of 25 to 160 acres for the growing of field crops, dairying, etc., and also larger areas for mixed farming—sheep and cattle raising, and other agricultural purposes.

The climate of the State is excellent, and facilities such as roads, railways, post offices and schools are quite up to date.

The seasons are well defined, and the temperature ranges from the night frosts of 26° experienced during June, July and August, to the 90-100° in the shade of December to March. Rainfall is fairly regular (quite regular in the cultivation half of the State), being from 10 to 15 inches in the extreme north west corner, where two million acres of Wheat show the main industry. Twenty to thirty inches is the average of the fertile, well watered Goulburn Valley and north eastern districts, where Wheat, wool, and dairying share equally, supported well by vineyards and fruit growing.

The S.W. corner is favoured with 25 to 36 inches, and here are some hundreds of square miles of wonderfully fertile country, used mainly for dairying; its price per acre, £50 to £150 is sufficient evidence of its productivity.

The S.E.—or Gippsland—quarter is the best developed, owing to its country being in the main heavily timbered; but its forests are pierced by numerous rivers and by large areas of rich river flats, and to-day Gippsland has fifty towns and villages, prosperous under a certain rainfall of 30-50 inches. The main industries are [illegible]

cutting, the growing of field crops, dairying, and stock-raising.

The centre of the State enjoys 20-35 inches of rain, and produces Wheat, wool, fruit, and dairy products. As the central district includes the three cities of Melbourne, Ballarat, and Geelong, intensive culture is also prominent.

Industries already well established, yet inviting many new members, are the breeding for pure stock or meat market of all farmyard animals; the growing of field crops for market, viz., Potatos, Onions, Carrots, Sugar Beet, Lucerne and Hay; the growing for inter-State consumption, or canning, drying, preserving for jams for export, etc., of fruits such as Apples, Pears, all stone fruits, nuts, citrus fruits, and berries of all kinds; market gardening as in England, differing only in that the use of glass and heat is necessary in the raising of early plants. I hope shortly to deal with yields, markets, expenses, and returns, of fruit and field crops.

That the settlement is well distributed is shown by the disposition of the population, which, roughly speaking, is as follows:—Melbourne, the capital city—with its suburbs—holds 600,000 people; Geelong, 45 miles S.W., Ballarat 75, and Bendigo, 120 miles N.W., each contain about 30,000. Scattered all over the State are 30 odd towns of from 3 to 10 thousand people; and there are about 250 smaller and younger townships (villages). The class of neighbour that might be expected and the prosperity that everywhere exists, can be judged by the facts that this State has sent approximately 100,000 soldiers to the war, and has subscribed well over £1,500,000 to the main war relief funds, apart from the innumerable local funds. Its latest item in this line is £155,000 to "Our Day" Fund at the end of October last. *G. Errey.*

HARDY FLOWER BORDER.

CAMPANULA AMABILIS.

AMONG border Campanulas C. amabilis is certain to occupy a good position in the future. The plant is already a favourite with those who know it. When grown in rich soil it grows about 5 feet tall, but it looks equally well when in a poorer compost and only about 2 feet in stature. It is of comparatively slender and graceful habit, and bears a multitude of large, deep blue flowers of much beauty. In some places, it must be admitted, the plant has not been long lived, but I think this must be attributable mainly to want of care by allowing it to become overgrown by other subjects, or from want of top-dressing in spring. *A.*

BULB GARDEN.

HOME-GROWN BULBS OF LILIUMS.

CULTIVATORS of the different Liliums have long recognised the fact that many species are extremely difficult to establish permanently. Imported bulbs of some species will absolutely refuse to grow in a satisfactory manner after they have had their basal roots cut off. This is particularly noticeable in the case of Lilium monadelphum (or Szovitzianum). I once had under my observation a large quantity of bulbs of this Lily imported from the Black Sea region. Though they were in splendid condition they never gave satisfaction. Some comparatively small English-grown bulbs similarly treated became thoroughly established. Lilium giganteum is a species in which the planting of large bulbs is sure to disappoint. It has been often suggested that bulbs raised from seed in this country would be the most likely to succeed in our gardens. Such bulbs have, until recently, been unobtainable from the ordinary trade sources, but latterly more attention has been paid by traders to home-grown bulbs. *W. T.*

The Week's Work.

THE KITCHEN GARDEN.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey

CUCUMBERS.—A very important detail in the management of spring-sown Cucumbers is to set the plants in their fruiting quarters before they become pot-bound. As a rule, as soon as the seedlings are developing their rough leaves they may be planted, but the heap of soil should be warmed before this is done. As the main shoot approaches the trellis the laterals should be pinched at the first or second leaf, and the main stem itself stopped later to preserve an even balance of growth. The extra sap received by the side growths will favour their fruiting. By pinching other laterals at the first leaf, a well-balanced plant will soon be formed. The roots at this stage will have grown freely in the soil. With a brisk bottom-heat the temperature of the house should range from 66° to 70° at night, and 75° to 80° by day, allowing a rise of 5° to 10° with sun-heat after closing the ventilators and damping the bare spaces liberally with moisture. The plants will be greatly benefited by light top-dressings of rich, open soil each time the roots appear on the surface. Do not over-crop at this stage unless the demand for fruits is pressing, and prepare another house for a succession crop, if not already done; let the structure be thoroughly cleansed.

HERBS.—During mild weather let the herb border receive attention, or plant a fresh one if considered necessary. If it be decided to plant a new border, choose a site that is easily accessible and ground that has been thoroughly trenched and well manured. All kinds of herbs are easy to cultivate, and should be planted together as much as possible, or there will be loss of time in collecting samples. Mint is sometimes difficult to grow in dry, sandy soils, and should be planted in the coolest and dampest situation. Leaf-mould, road scrapings, burnt ash and similar materials should be used freely for lightening heavy, tenacious soils.

SEED-SOWING.—A few seeds of certain kinds of vegetables may be sown on gentle hot-beds. Lettuces, Carrots, and Turnips that have been gently forced are of superior quality to those grown out-of-doors. Early Lettuce is usually rather tough when grown entirely in the open. Good results are obtained with these three crops by growing them in cool frames covered at night with mats. Cauliflowers, both early and successional varieties for planting out on a warm border, may be forwarded by sowing in this manner. Cauliflower plants that have been wintered in cold frames should still be grown in the frames, but given abundance of air in order to keep them dwarf and hardy. Unless frost prevails, transplanting may be done during the second or third week in March. Seeds of Dwarf Gem Brussels Sprouts may be sown in the same manner for early supplies, and successional sowings of this green crop may be made at the beginning of March. Make frequent small sowings of Radish on gentle hot-beds. Sow the seeds thinly and water them freely to encourage rapid germination and quick growth. Ventilate the frame liberally as the plants increase in growth with brighter and warmer days.

THE ORCHID HOUSES.

By J. COLLIER, Gardener to Sir JEREMIAH COLMAN, Bart., Gatton Park, Reigate.

AERIDES, SACCOLABIUM, AND ANGRAECUM.—Plants of these three genera are showing signs of renewed root action, and any necessary repotting should be carried out at this stage. It is not desirable to repot the plants unless it is absolutely necessary. If repotting is decided on, first remove the old potting material from between the roots and wash the smaller particles from amongst the drainage. Aerides and the stronger-growing Angraecums are best grown in pots, while Saccolabiums and the smaller-growing Angraecums succeed best in Teak-wood baskets. Plants that have become leggy through losing a number of their lower leaves should be shortened by cutting away a portion of the stem, but retaining a sufficient number of roots. In repotting, arrange flat crocks over the bottom of the receptacles, place the stem of the plant as low down in the basket as possible, and then carefully place clean crocks between the roots to one-half the depth, filling the remaining space with clean Sphagnum-moss, mixed with pot-sherds. Fill the receptacles to their rims with the compost, arranging it in the form of a mound in the middle of the pot or basket. Cover the surface with a layer of living Sphagnum-moss. Cleanse the plants thoroughly from scale insects, which infest the stems and axils of the leaves. Water the roots copiously, and place the plants in the warmest house. Keep the Sphagnum-moss green by lightly spraying with clear water until growth is active, when water may be given liberally. Aerides Lindleyanum, A. crassifolium, A. crispum, and A. Warnerii are best grown in an airy position, in a house having an intermediate temperature.

CATTLEYA AND LAELIA.—Cattleya Trianae, C. Percivalliana, C. chocoensis, and many hybrids that flower at this season, will now be pushing their flower-spikes through the sheaths, and the plants should be afforded a little extra water at the roots, withholding moisture again as soon as the blooms are fully expanded, after which very little water will be needed until the plants again begin to grow. The roots of dormant Cattleyas and Laelias should be kept comparatively dry, until their flower-spikes develop or growth recommences. Well-matured specimens require only just enough moisture to retain their pseudo-bulbs in a plump condition. Notwithstanding that Cattleya Mendelii, C. Mossiae, and others in a resting stage are developing a number of fresh roots, they must still be watered with extra care, affording each plant a moderate quantity of moisture whenever the compost becomes quite dry. Although the present is not the usual time for repotting, any plants that have commenced to make new growths and are beginning to push fresh roots from the bases of the last pseudo-bulbs, may be repotted if necessary. The work is better done now than when the young roots have attached themselves firmly to the sides of the pots. During the winter months, Cattleyas and Laelias are very subject to the attacks of scale insects, which should be removed by sponging the leaves and rhizomes with an insecticide, taking care to dislodge the pests from around the eyes at the bases of the pseudo-bulbs. The creatures secrete themselves underneath the outer skin, which should be opened carefully and the pests removed by the aid of a small brush. If scale is allowed to remain unchecked, it will infest the young growths as they develop. Seedlings of these plants should be kept growing without a check until they have reached the flowering stage. If possible they should be afforded a warmer temperature than the parent plants. Greater success is obtained when a house is devoted entirely to the raising and growing of seedlings. A temperature of from 60° to 75° and a moist atmosphere are suitable conditions. Shift the plants into larger pots as they require increased room, and never allow them to become pot-bound. Employ as a rooting medium equal proportions of A1 fibre, Osmunda-fibre, and Sphagnum-moss; cut the materials rather short, and add some crushed crocks to keep the mixture porous. Vaporise the house frequently to keep down thrips. It is at this period of the year that the small yellow thrip insects multiply so fast that if immediate means are not taken to destroy them they will cause great damage to the plants. From this time onwards it will be good practice to vaporise each house once every fortnight, and on the alternate weeks the plants should be lightly sprayed overhead with some safe but effectual insecticide. It is best to do this just before sunset, as this minimises the danger of the foliage being scorched by the sun's rays. Before commencing vaporising or spraying, very little damping down should be done, but a moderately high temperature should be maintained, so as to induce the insects to emerge from the places of their concealment.

THE HARDY FRUIT GARDEN.

By JAS. HUDSON, Head Gardener at Gunnersbury House, Acton, W.

PROTECTING THE BLOSSOMS OF WALL TREES.—Last year, in consequence of the phenomenally late season, I decided to risk any possible danger of injury from frost, and our trees escaped. This year it will not be expedient to take such a risk, as the flower-buds are already swelling much too fast. My plan is to protect the blossom with half-inch fish-netting made on the square mesh, which causes it to hang true; this I find gives ample protection. When short of this netting I have used two thicknesses of one-inch netting, also made on the square mesh; this I found to answer well. This netting is 9 feet wide, but does not touch the ground by about 3 feet. It is fixed at the top of the wall to a running wire, and light Bamboo rods are arranged slantwise from the wall and secured against any possible movement, the netting being tied to the rods. This device affords ample protection to keep the blossoms dry, which is most essential. A few hives of bees are near to the wall, and the bees do not mind the netting in the least.

WALL COPINGS OF GLASS.—Wall copings afford the best means of protecting fruit blossom from spring frosts. To fix such copings at the present time is not, perhaps, advisable, but they repay the outlay. Where such copings are provided 1-inch mesh netting is quite sufficient, and it may be allowed to hang nearly perpendicularly with sufficient stakes to prevent the netting beating in the slightest degree against the trees. I am not in favour of using thicker material than these netings unless the garden is in a very cold district. Heavy screens should be hung with rings from the top of the wall in order to be easily movable in bright weather.

PRUNING NEWLY PLANTED TREES.—In the autumn of 1916 I planted standard trees of Damsons. As I do not favour severe top pruning when planting, the shoots were only shortened about one-third their length. Short, stocky shoots developed last season, and these are now closely studded with fruit-buds. Fruit trees planted now should be pruned more severely, as the roots would be inactive for some time. In the case of late-planted Apples and Pears I would also remove all the flower-buds, apply a mulch to the roots, and water the trees immediately they were planted. Standard trees should be supported to stakes directly they are planted, while bushes and pyramids should be made secure against spring gales.

THE STORING OF FRUIT. Some useful notes on this subject have been published in recent issues of the *Gardeners' Chronicle*, including those from the Hon. Vicary Gibbs and Mr. Edwin Beckett. It must be remembered that my advice to spread the fruits thinly on the shelves was given at a time when many of the latter were empty. When our Apples were first placed in store some were arranged at least six layers deep, but as soon as space was available they were given more room, and doubtless Mr. Beckett has done the same some weeks ago.

FRUITS UNDER GLASS.

By W. J. GUISE Gardener to MRS. DEMPSTER, Keele Hall, Newcastle, Staffordshire.

YOUNG VINES.—There is still time to propagate Vines from eyes, and prunings that were heeled in on a border outside for this purpose should receive attention. No advantage is gained by delaying the work after February. Eyes that were inserted in small pots as advised last month will soon be ready for shifting into 6-inch pots. Use a compost consisting of loam, bone meal, and mortar rubble, and plunge the cutting pots into a bottom heat of 70° to 80° and keep the atmosphere moist. Light syringings will keep the buds damp enough for the present. Guard against a sudden lowering of the temperature, which would give a check that would seriously injure the young plants. Cut back vines should be shaken out, as soon as the buds have started, and shifted into 10-inch pots. The soil for these vines should consist of a mixture of rich, firm, fibrous turf, ½-inch bones, and lime rubble. A similar temperature and treatment as previously advised will suit these also, but very little water must be given until the roots have taken full possession of the soil. Vines planted in borders last year should be allowed to develop slowly. Aim at building up a sturdy, short-jointed rod, without unduly forcing the plants.

POT VINES.—The grower must use his discretion when thinning the bunches on pot vines. Some of the bunches may require heavy thinning, others very little; at the same time a properly thinned bunch will be free from small or stoneless berries, and still retain sufficient Grapes to form a perfect bunch. Overcropping pot vines usually ends in failure, so far as size of berry and colour go, which are the most essential points in Grape culture. Six, or, at the outside, eight, bunches, according to the vigour of the rod, are quite enough for the vine to carry. Lateral growths should be pinched and tied out to secure an even balance of foliage over the trellis, pinching the subordinals to one leaf. Suitable top-dressings of rich materials should be applied occasionally in small quantities and well watered with chilled water. Diluted liquid manure used warm is beneficial, but if given in strong doses the young roots will collapse and the foliage flag during bright weather. Discontinue direct syringing, but keep the walls and bare spaces moist. A temperature of 65° at night and 75° by day, with air according to the weather, will be suitable conditions. A few degrees higher may be allowed with sun heat when the house is closed.

SUCCESSIONAL VINERIES. The same management as advised for the early houses in a previous calendar will apply to successional vineries, except that the temperature should be a little higher as the season advances. When the buds are swelling a temperature of 60° at night and 70° by day, with a minimum temperature of 65° as the flowering period will be suitable. Take advantage of sunny days to let the temperature rise to 65° or 70° when the houses are closed. By these means a great saving of fuel will result.

PLANTS UNDER GLASS.

By E. HARRISS, Gardener to LADY WANTAGE, Lockinge Park, Berkshire.

PROPAGATING EDGING PLANTS. It is necessary to propagate fresh batches of plants used as edgings to plant-stages about twice a year, as old specimens when overgrown are unsightly. Such plants as Panicum variegatum, Pilea muscosa, and Selaginella are easily increased from cuttings, which, if rooted and grown in a moist, warm atmosphere, make useful plants in a few weeks. The cuttings may be dibbled into 3-inch pots filled with a sandy compost. Well water the cuttings and place them in a propagating case to root. Isolepis gracilis may be increased by division of the roots. Place the divided portions in 3-inch pots and arrange the pots closely together in the plant stove until they have made suitable growth.

BEGONIA. Tuberous Begonias may be raised from seeds sown during the next two or three weeks in pans. Let the seed pans be thoroughly washed and place in them plenty of drainage material. The compost should consist of a mixture of loam, leaf mould, and sand which has been passed through a fine sieve. Well water the soil before sowing the seed. Care is necessary in handling the seed, or much of it will be lost. It is a good plan in the case of all small seeds to mix it with a little very fine sand to ensure it being evenly distributed. When sown, lightly cover the seed with sand which has been passed through a hair sieve. Cover the pans with a sheet of glass, and on the glass place a sheet of brown paper until the seeds have germinated. Place the pans on a shelf in a moist, warm house. The old tubers which have been resting may be placed in boxes of clean, sifted leaf mould and the boxes stood near the roof glass in a house having an intermediate temperature. If necessary the stock may be increased by dividing some of the largest tubers. When sufficient growth has been made the plants may be potted singly in receptacles of suitable sizes and grown on gently in a moist, warm atmosphere. When the plants have filled their pots with roots they may then be given cooler treatment.

CLIVIA (MANTOPHYLLUM).—Plants of Clivia are developing their flower-spikes, and need copious supplies of water and stimulants, or the flowers will be lacking in colour. After flowering any repotting necessary may be done. This plant is easily increased by division of the roots, which can be done while the work of repotting is in progress. Provide a rich rooting medium, as the Clivia is a gross feeding plant. If the plants have been repotted in recent years they need not be disturbed now, for specimens grow and flower satisfactorily in the same pot for several years provided they are afforded plenty of stimulants during the growing season.

THE FORCING HOUSE. There should be no difficulty in providing a good supply of flowering plants, as the various kinds of forcing subjects require very little fire heat to bring them into flower. Before using flowering plants in the dwelling grow them for a short period in a cool house. It may be necessary to retard some of the later batches of Narcissi and Tulips by placing them in a cool house or frame on the north side of a wall. Lilacs and species of Prunus and Pyrus may still be lifted from the open ground and placed in the forcing house as required.

THE FLOWER GARDEN.

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

CALCEOLARIA.—If pyramid or standard plants of Calceolaria amplexicaulis are required, transfer the plants to 7 or 8 inch pots, and grow them in a temperature of 55° to 65°. Exercise care that they suffer no check to growth from lack of moisture at the roots. Once started into free growth, the plants make remarkable growth.

HUMEA ELEGANS.—Plants of Humea elegans that have been kept on the dry side through the winter will from now onward require more moisture at the roots. Do not be tempted to raise the temperature by the use of fire heat.

CAMOMILE.—I grew a quantity of this medicinal herb last year, and was not a little surprised at the long-continued bloom produced and the fairly good effect the plants gave in the mass. The plant is easy to cultivate, and rooted pieces detached from old plants at the present time and set 9 inches apart will do excellently well in beds.

TRANSPLANTING SHRUBS.—This note is rather a caveat than any advice. It is usual to transplant shrubs about this date, but, of all seasons, probably there is no worse than the present for the well-doing of the shrubs themselves. The best time is autumn, on the whole. But when circumstances do not permit of transplanting then, the next best time is when the buds are on the point of bursting. The work needs to be carried out without delay in order that the roots are not dried, and a soaking of water must follow immediately on planting, a mulch, if it be even of dry soil, following, when nothing more will be needed. I have moved a great variety of shrubs and trees at the point of growth indicated, including tall Conifers, Hollies, deciduous and evergreen Oaks, dwarf shrubs of various kinds, and Apples, and have never had a failure. So, if possible, refrain from transplanting, as I am doing with a lot of large shrubs, till growth is on the point of breaking. These include Daphniphyllum, Japanese Oak, Cornus Mas, tall and old Yews, and more common subjects.

WILLOWS.—The cutting over of dwarf and the pruning of standard Willows grown for the colour of their bark, Dogwoods and others of a like nature should soon be seen to. When cut year after year a little in advance of the portion cut the previous year, the shoots gradually become weaker and when this is observed by cutting below these scraggy portions and the soil properly dressed with manure, the original vigour will be renewed. Willows may always be cut down to the ground level with advantage.

EDITORIAL NOTICE.

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

Special Notice to Correspondents. — *The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.*

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

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

APPOINTMENT FOR THE ENSUING WEEK.

WEDNESDAY, FEBRUARY 27—
Elgin Bot. Soc. meet.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 40.1.

ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London: *Thursday*, February 21, 10 a.m.: Bar. 30.1; temp. 45.0°. Weather: Bright sunshine.

A New Parasite of Potatos.

The pathogenic troubles of the Potato are well-nigh endless; they come not as single spies, but in battalions. The latest addition to the parasites of the Potato is Tylenchus penetrans, a nematode worm allied to the well known root and stem parasite, which causes trouble in Cucumbers and many other plants. An attack by this parasite may be recognised by the presence of numbers of minute pimples on the surface of the Potato tuber. Each pimple is perforated by a minute opening, through which the parasites escape from the Potato, and no doubt pass through the soil into other tubers. If the infection is severe the number of blisters or pimples may become considerable; the separate swellings run together, and the surface becomes shrunken owing to the collapse of the tissues.

Mr. N. A. Cobb, of the Bureau of Plant Industry, U.S. Department of Agriculture, who has published a description* of this parasite, states that Tylenchus penetrans also attacks the roots of Violets and causes serious damage to the plants. In the case of the Potato the damage done by this nematode is apt also to be serious. An attack leads to reduced yield and small and unsightly tubers. The reduction of yield is to be ascribed to the fact that the parasite gains access not only to the tubers, but also to the root-system. That the pest is likely to prove troublesome may be judged from the fact that it has already been found in plants growing under such different climatic conditions as those which occur in Florida, Georgia, North Carolina, New York, and Michigan; and we have already had so many North American plant parasites that we shall do well to be on the look-out for the advent of this latest addition to their number.

Tylenchus penetrans falls among the specialist parasites; that is, it only affects (so far as is known) a few plants, and in this respect differs greatly from its formidable ally Heterodera radicicola, which is known to infest no fewer than 500 different species of plant. Indeed, it is not improbable that this latter eelworm is of all pests that which does the most damage to garden crops. Therein lies an additional reason why Potato growers should keep a sharp look-out for the appearance of the minute pustule which is a sign of the presence of the newly described Potato eelworm, and should above all avoid planting any seed tubers the aspect of which is open to suspicion. Microscopic examination of suspected tubers is a ready means of determining whether the eelworm is or is not present; for the parasite once seen under the microscope is easily recognised, and its size—about 1-25th of an inch—makes it visible even with a very low magnification. Although care in the selection of seed is the best means of preventing the spread of this pest—as it is of so many others—another means consists in treating the tubers with a weak solution of corrosive sublimate, the poison used successfully for the treatment of Potato scab.

Mr. Cobb's account of this pest contains excellent illustrations of Tylenchus penetrans, and a full description of the characters which distinguish it from the other parasitic eelworms.

* *Journal of Agric. Research*, Washington D.C. Oct. 3, 1917.

HORTICULTURAL CLUB.—The annual general meeting of the members of the Horticultural Club will take place on the 26th inst., at 2, Whitehall Court, Whitehall, S.W., at 5 p.m. The president, SIR FRANK CRISP, Bart., will preside. On this occasion the house dinner, which usually follows the business meeting, will not take place. Whitehall Court is situated immediately at the back of the War Office, and the Club Room is on the second floor.

ALLOTMENTS IN GLASGOW.—A memorandum issued by Mr. JAMES WHITTON, the Superintendent of Parks at Glasgow, on the subject of the allotments under his direction, shows that there was a keen demand for allotments in the Glasgow district in 1916 and 1917. The number of plots provided amounts to about four thousand, the average size being from 200 to 250 square yards. The intention at first was to let plots of varying sizes, *i.e.*, 200, 250, and 300 square yards; but it was found that in the great majority of cases 200 yards was all that one holder could cultivate well, and all plots now let are of this size. The results during 1917 were very satisfactory, and the crop of Potatos alone on all the plots combined amounted to about 1,300 tons. The Parks Department has given a great deal of assistance to plot-holders in such matters as the erection of tool sheds, fencing, and in the provision of a certain amount of skilled advice.

GOVERNMENT SEED-TESTING STATION.—Over 4,000 samples of seeds have been received for testing at the Government Seed Testing Station, under the Food Production Department, at 72 Victoria Street, since the station was opened in November.

THE KILLING OF MIGRATORY BIRDS.—The Board of Agriculture has made an Order extending to March 31, 1918, the time for killing in England and Wales a number of migratory wild birds, including the curlew, the knot, the whimbrel, the golden plover, the red shank, the godwit, the snipe, the woodcock, the teal, the widgeon, the mallard, the shoveller, the pochard, the white-fronted goose, the pink-footed goose, and the grey leg goose. By the same Order the time for the lawful sale, exposure, or offer for sale, or possession of any of these birds is extended to April 15, 1918.

HONOUR FOR M. D. BOIS.—The French Academy of Science has bestowed on Monsieur D. BOIS, Editor of the *Revue Horticole*, the Parville Prize of a thousand francs. This distinction is given as a reward for services rendered to the cause of science. The prize marks in a tangible manner the valuable work done by M. BOIS for many years in introducing and popularising in his own country the vegetable productions of the colonies.

FLOWERS IN SEASON.—Mr. JAMES A. PAICE sends from Aldenham Vicarage Gardens spikes of Iris stylosa, which he states is flowering magnificently in the Vicarage Gardens this season.

PRICES OF COPPER SULPHATE FOR POTATO SPRAYING.—Maximum prices have been fixed for sulphate of copper for agricultural purposes. Potato growers are urged by the Food Production Department to place orders for this material with their usual merchants or dealers without delay, and to take delivery as soon as possible. The prices are based on a sliding scale, and deliveries early in the season will be made at a lower price. The price for sales of quantities of not less than 1 ton by makers f.o.r. at works is £48 per ton in January-February delivery; £50 per ton March-April delivery; £52 per ton May-August delivery. The prices for sales by merchants, dealers, chemists, and others, ex store, shop, or warehouse, are as follows:—

Quantity included in sale.	Date for delivery. Jan.-Feb.	Mar.-April.	May-Aug. inclusive.
2 cwts. and over	54s.	55s.	56s. per cwt.
56 lbs. but less than 2 cwts.	56s.	57s.	58s. ,,
28 lbs. ,, ,, 56 lbs.	58d.	59s.	60s. ,,
8 lbs. ,, ,, 28 lbs.	6d.	7d.	7d. per lb.
4 lbs. ,, ,, 8 lbs.	7d.	7½d.	8d. ,,
1 lb. ,, ,, 4 lbs.	8d.	8½d.	9d. ,,

THE ONION MAGGOT.—From experiments carried out by Mr. A. GIBSON at Ottawa* it appears that the damage done by the Onion maggot (Hylemyia antiqua) may be in large measure prevented by spraying the plants with a mixture of sodium arsenite (½oz.), molasses 1 pint, and water 1 gallon. The sodium arsenite is dissolved in the water, which must be boiling, the molasses are then added, and when cool the mixture is ready for use. It may be applied by means of a watering-can, and owes its effect to its attracting and poisoning the adult flies.

LOCAL SOCIETIES.—The annual meeting of the Norfolk and Norwich Horticultural Society was held on the 2nd inst.: the president, Mr. J. A. CHRISTIE, was in the chair. The financial statement showed that there was a credit balance of more than £93. Mr. J. E. T. POLLARD was elected hon. secretary, and the other officers were re-elected.

—— The Merton Horticultural Society's annual meeting took place on the 29th ult., when Mr. R. PETERSON, the president, occupied the chair. The officers were re-elected, and three new members added to the committee. The Society has a credit balance of nearly £12. It was decided to hold a show on August Bank Holiday.

PUBLICATIONS RECEIVED.—***The Peaches of New York.*** By C. P. Hedrick. (New York Agricultural Experiment Station.)—***Sweet Pea Annual for 1918.*** National Sweet Pea Society. (H. D. Tigwell.)—***Transactions of the Royal Scottish Arboricultural Society,*** Vol. XXXII., Pt. I., January, 1918. (Edinburgh: Douglas and Foulis.)

* *The Canadian Horticulturist*, Dec., 1917.

HOME CORRESPONDENCE.

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

EFFECT OF SUNLIGHT ON GROWTH.—In your issue of December 8, 1917, p. 251, you referred to a collection of "sports" exhibited by me at the Royal Society, illustrating, amongst others, leaf-division, proliferation, spur-peloria, and fasciation, which had been produced at will in sunlight by selective screening. It may interest some of your readers to know that a specimen of Tropæolum tuberosum, showing pre-arranged leaf-division, is now deposited in the Botany section of the National History Museum, South Kensington. The experiment was repeated during last summer at Dr. Rendle's request, and was quite successful, the leaves either entire or with different numbers of lobes, being grown in sunlight where desired, up a stem of exciting 8 feet in height and upon lateral shoots. *H. E. Durham (Col.), Home Close, Harrogate, Horticulturist.*

THE STORING OF APPLES.—The remarks of Mr. Hudson and of Mr. Beckett bear out to a contradictory, as Mr. Hudson was apparently writing of choice dessert Apples and Pears needing ripeness, whilst Mr. Beckett was dealing with the storing of late Apples. I have packed Apples in boxes 4 feet deep in October and taken them out in February as fresh and sound as when stored. I prefer boxes that will hold about a bushel, but they are not always at hand, and when there are hundreds of bushels from the orchard they must be stored as best one can. Doubtless the object of having lattice shelves in fruit rooms is to see each fruit at a glance and determine readily when it is ripe for use. A young man I have put Apples and Pears in single layers on lattice shelves and in shallow drawers, with the result that the fruits shrivelled by Christmas. Like Mr. Beckett, the Apples in the grass set me thinking. I dissent from the statement of *A. C.* p. 151 that fruit gathered wet is better than when dry. That may be the case if the fruit is quite sound and free from disease, and of the harder and later kinds such as Norfolk Beauty, Lemon Pippin, French Crab, and Northern Greening. He also states that fruit should be gathered before it is ripe; this requires to be qualified. "Fit to gather" and "ripe" are two quite distinct terms. Ever, Ribston Pippins and King of the Pippins are gathered before ripe, not to mention all the fruit that rot from November till May. But the fruits are "fit to gather" when they part easily from the tree. There is one point to remember—all fruit is best in its season; when that season is past it is of less value, even if it keeps sound. *Jap.*

GROWTH OF SNOWDROPS.—The illustrations of Snowdrops in fig. 14, *on* p. 33, are interesting so far as they go, but would have been much more instructive had exact details of temperature, rainfall, and sunshine been given for the district in which they are growing during the month of December, or at least the last fortnight thereof, in each case; also the date in each year when the leaves first appeared through the surface. Perhaps the contributor of the photograph can supply these data. If not, may I suggest that in succeeding years the clump be kept under careful observation, and these details recorded. So far as one can judge with rough records, temperature alone is of far more importance than rainfall or sunshine at that period of the year. *C. Nicholson, Chingford.*

APPLES RIVAL AND BARNACK BEAUTY.—In reply to *Southern Grower's* inquiry, on p. 51, as to the merits of Apples Rival and Barnack Beauty, I may state that I have grown them both for upwards of ten years and they have never failed to give good average crops. Rival is a good grower, and the fruit has a very pleasing appearance, which, for market purposes, is in its favour. The fruits keep well into December and are usually very firm, a point of importance for varieties to travel well when picked for market. Barnack Beauty I consider a most useful late Apple, and the flavour is quite up to the average for Apples after the turn of the year. In appearance the fruit cannot compare with Rival, but on the sunny side they develop a bright crimson colour. The fruits are of good average size, and remain firm well into February. My trees are all bush or trained specimens, and I do not know how they would succeed as standards. For a shore is rather a heavy soil, and a clayey subsoil. *R. Stephenson, Brickhill Gardens, Hertford.*

RELIEVING LABOUR.—On p. 4 Mr. Brockbank refers to using flower-beds. Surely these must be very few at this time; they should be filled with roots of Beans, Carrots, or other vegetables that are suitable; last year every odd corner in my garden where there was a blank space, that is beds, rockery, and odd corners, was sown with dwarf Beans, and from these we harvested several pounds of Beans. A large [illegible] in the district filled all his flower borders with Beets and Carrots. I would say, do not *cultivate* what is cultivated, and rather grow crops that need little attention to save labour. *H. E. D.*

YEW POISONING (see p. 70: *Pur. Ed.*) we find the question of Yew poisoning of animals fully dealt with on p. 63 of the R.H.S. *Gardeners' Diary* for 1918. I venture to suggest that in the case of the particular field to which he refers in which are Yews that have never proved fatal to animals, the ground is in good fertility, the stock well fed, and therefore the animals do not eat the Yew greedily. *Weather spoon, Mount Ballan, Chepstow.*

ON INCREASED FOOD PRODUCTION

LECTURE ON POTATO GROWING.

[illegible] the auspices of the Royal Horticultural Society, a public lecture on Potato growing was delivered in the Mansion House, London, on the 15th inst., by Mr. W. Cuthbertson, F.L.S. The Right Hon. Lord Mayor presided, accompanied by the Lady Mayoress, and he was supported by Mr. A. Lansbourne, Sir Jeremiah Colman, Bart., Mr. Veitch, Rev. W. Wilks, Mr. F. [illegible], the Board of Agriculture, the Fruiterers' Company, and a number of other distinguished people interested in cultivation. The large hall of the Mansion House was crowded to its utmost capacity, and many people were unable to find seats.

Mr. Cuthbertson commenced by saying that in 1916 17,200,000 new allotments were created in this country. These allotments occupied more than 13,000 acres of land, and more than a million people must have been directly interested in them. He advised that the Potato crop should be the chief consideration of allotments, and proceeded to give hints on [illegible] cultivation as follows: "I should like to

FIG. 35.—ODONTOGLOSSUM MEMORIA F. M. OLIVER: A SPIKE OF FLOWERS BRIGHT CLARET-RED WITH WHITE MARKINGS AND FRILLED LIP. (See p. [illegible])

gest that you do not require to buy all the seed Potatos you require every year. If you are growing from Scotch or Irish seed, dig up a number of roots in the summer or early autumn before they are quite ripe, allow the tubers to lie on the ground for a few days to become green, and then put them away in boxes in a cool, shady place to be kept for seed next year. This is the method followed by many of the largest and most successful growers. 'Once-grown seed,' that is, tubers which have been grown from Scotch or Irish seed, will generally, if properly handled, give as good a crop the second year as the first, but after that the virtue of their origin seems to have gone. Fill one-half or three-quarters of your Potato land with this once-grown seed, and buy every year from Scotland or Ireland as much fresh seed as will plant the other half or quarter of your land, and then save as many tubers from it as will plant a half or three-quarters of the ground the following year.

"You may ask why Scotch or Irish seed is best. The real reason, I think, is that it is less ripened, less matured, and, coming from a colder to a warmer climate, it brings with it the vigour of the colder climate, and this tells largely on the cropping results for two years.

planting to allow the cut surfaces to dry. Even in February it is well worth while to hox seed; in six weeks' time sets will sprout satisfactorily. Any box 3 inches deep will do to hold them.

"Among the early varieties tried at Wisley by the R.H.S., Midlothian Early and Duke of York are considered to be the best first earlies. These two Potatos are nearly identical. May Queen is another good early sort, but we always find difficulty in keeping it north of the Tweed. If you lift the crop of Midlothian Early or Duke of York when the tubers are ripe and store them you will find they will be quite good for eating until October. Other early varieties (though not quite so early as Midlothian) which are commended by the R.H.S. after cropping and cooking tests, are Sharpe's Express, Sir John Llewelyn, Stirling Castle, and Witch Hill.

"What are called mid-season or second-early varieties are a big class, but do not grow very many of them; perhaps about as many as you do of the earlies. The two mid-season varieties I should advise are British Queen and Great Scot. The former is kidney-shaped, the latter round.

"The late or main crop section is by far the most important of all. For many years Up-to-Date has stood at the head of it. Dalhousie

son in the important trials conducted yearly by the Board of Agriculture at Ormskirk.

"All land is the better for an occasional dressing of lime. If yours has not had one recently you might give it a top-dressing before you begin to work it down for planting—say 4 ounces of the finest powdered lime to the square yard. Lime unlocks, and makes available, the plant foods in the soil. It prevents a soil from becoming too acid—too sour, to use a common expression.

"When planting on a small scale, set a line across the patch, and with a spade take out a trench or opening in the shape of a V, but with one side straight—3 to 4 inches deep. Along the bottom of this sprinkle a little artificial manure; 2 ounces to the square yard will be enough. If you have any old potting soil or wood ashes, or leaf-mould, make the trench a little deeper and spread these materials along the bottom. Lay the sets in the trench carefully, sprouts upwards, giving the tuber a gentle press into the soil. Push back the soil taken out and restore the level surface, thus leaving the tubers covered with 2 to 3 inches of soil. Watch carefully for the appearance of growth above ground, and whenever you observe it, draw soil with a hoe from either side on to the top of

FIG. 36.—SPROUTED SET SUITABLE FOR DIVIDING.

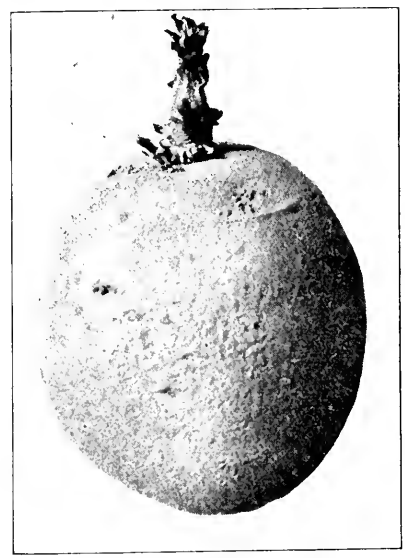


FIG. 37.—SEED TUBER WITH A SINGLE SPROUT.

seed Potatos should be sown in boxes. Well-sprouted seed will increase the crop by 20 to 25 per cent. The big Ayrshire and Lincolnshire growers have buildings specially erected for the purpose and made to hold thousands of large boxes. The object is to get strong, stubby, dark green sprouts on the tubers at planting time. By watching the sprouts carefully in the early stages, you can form an opinion whether your seedsman has supplied you with a pure stock or not. The sprouts of some varieties are black, of some they are purple, of some pink, some are green, and some nearly white. If your box of tubers is producing sprouts all of the same colour you may be satisfied that you have secured a fairly pure stock. If course it is possible that two varieties having the same coloured sprouts might be mixed and so not able to be detected.

"Ideal seed tubers are between two and three ounces in weight, but to get all seed Potatos that size is impossible. I should advise you to plant sound tubers anywhere between 1½ and 4 ounces, and tubers larger than 4 ounces you should cut into two or three sets, according to the size of the tuber and according to the number of eyes (see fig. 36). Two strong eyes, at least, should be left on every set. Cut the tubers into sets a few days before

Seedling, The Factor, Duchess of Cornwall and Dobbie's Prolific are all closely akin to Up-to-Date. Varieties of the Up-to-Date class did remarkably well in 1917, but for some years previously they had not been doing so well. They want extra good cultivation, and they must be sprayed. The wise man, I think, would plant half of his late variety space with an 'Up-to-Date' type and the other half with Arran Chief or King Edward or Golden Wonder.

"There are many new varieties on the market. The most remarkable novelties I have seen are Majestic, a distinct, heavy cropping, white kidney, from the raiser of Up-to-Date—Mr. Findlay, of Markinch—and Kerr's Pink, a round variety, flushed with pink, a good keeper and cooker.

"Both Majestic and Kerr's Pink are resistant to wart disease. There is no remedy for those varieties which are susceptible to the wart disease, but fortunately a number of varieties are immune. These only should be planted in infected gardens. The best available immune varieties are: Second early, King George and Great Scot; main crop, Golden Wonder, The Provost, Kerr's Pink, The Lochar, Tinwald Perfection, and The Ally. The three last have each gained gold medals presented by Lord Derby for the best immune variety of the sea-

it. If the sprouts on your tubers are long you will require to ridge up the soil over them at once. If the growths push through again while there is still a danger of their being injured by frost, do not be afraid to draw up more soil and cover them again. When danger of frost is over, draw up more soil—plenty of it this time—right up against the stems, bringing the soil from the middle of the row. All that it is necessary to do after that is to keep the plot free from weeds. Never work the land, or even walk between the drills, when the ground is wet, particularly in the case of heavy soils. If you have not time to plant as I have described, after setting the line take out slits with a spade at the proper distance and get someone to put in the sets, after which allow the soil to fall back on them; or if working single-handed use a trowel.

"In deciding the distance at which to plant, there are several things to consider, such as strength of soil, strength of haulm, whether early, second early, or late varieties. On moderate land plant early varieties in rows 24 inches apart, placing the sets 12 inches apart in the row; second earlies 28 by 14; and late varieties 30 by 15. For confined gardens—I mean small plots surrounded by high walls or high hedges—early varieties should mostly be grown, and

they should be given plenty of room In this connection I advise keeping the new variety Majestic in view. The haulm is not too strong and the plant gives plenty of tubers. On an open allotment the right proportion of the different classes to plant is one part early, one part second early, and four parts late. One often reads the advice that sets should be disbudded—that is, that before planting, the growths from all the eyes, except one or two, should be rubbed off. I never myself pay any attention to these recommendations, nor do any of the big growers. Even in our trails, where we often get an average yield of 4 pounds a root, we do not disbud.

"If you have planted good, sound, healthy tubers you are not likely to have much trouble, except with ordinary 'blight' (Phytophthora infestans). If your seed has not been of the best you may have 'leaf-curl,' for which there is no known cure. You may also have 'blackleg.' The latter is observed by the wilting and slight yellowing of the foliage. If the stem is pulled the base is found to be black. If the stem is cut across above where it is black, little brown spots will be observable at the corners—a sure indication of 'blackleg.' It is not often a large percentage of plants is attacked, but those that are diseased should be dug up and burned—tops and tubers too if any have formed, as the 'blackleg' disease is carried in the tuber.

"Ordinary Potato disease, or 'blight,' cannot be cured, but it can be prevented, and the only preventive I know of is spraying with Bordeaux or Burgundy mixture while the plants are still healthy. The Government prescription is 4 lbs. sulphate of copper, 5 lbs. washing soda, 40 gallons water; this is called Burgundy mixture. The materials are dissolved separately and then mixed, adding the soda to the copper solution. The specific should be applied with a fine sprayer, the object being to coat the entire surface of the plant with the spray, which will dry on the leaves and stems and so prevent the spores of the fungus attacking them. Do not be content with spraying once; give two or even three doses at intervals. Green fly may attack the haulm. The Bordeaux or Burgundy mixture, if applied in time, will help to obviate this pest too. Bordeaux mixture is made by using lime instead of soda, and the formula is usually 5 lbs. copper sulphate 5 lbs. lime 50 gallons water.

Lord Lambourne rose, on behalf of the Royal Horticultural Society, to propose a vote of thanks to the Lord Mayor for presiding, and to Mr. Cuthbertson for his interesting lecture. He had noticed that on every occasion in which the welfare of the citizens of London or the people of this country were concerned, the Mayor was always ready to render the utmost assistance, and he felt sure he spoke in the name of all present in expressing deep gratitude to him and to the Lady Mayoress not only for presiding over the meeting, but for lending the Mansion House for the occasion. Lord Lambourne referred to the work done by the R.H.S. in stimulating food production, and mentioned that the Society had been the first to call attention to the danger of a scarcity of food. The vote of thanks was carried with acclamation. Mr. Cuthbertson briefly acknowledged it, and the Lord Mayor, in reply, said he immensely appreciated the kind way in which Lord Lambourne had spoken of him, and the honour done him by the members of the audience, who had come in such large numbers to hear the lecture. He was only sorry that his own gardener was unable to be present, but he should send him a copy of the pamphlet in which the lecture had been printed.

HARICOT BEANS

A SLIGHT error crept into my article on Haricot Beans (p. 59), which states that a pint of seed was sown, whereas it should have read half pint of Princess of Wales Bean was sown. *G. H. H. W.*

A POTATO COMPETITION

A SUCCESSFUL Potato competition was held in Glencairn, Dumfriesshire, last year, and at a recent meeting it was agreed to hold a similar competition in the ensuing season. Mr. Macara, merchant, Moniaive, has offered the prize money, and Mr. T. Oliver, who is on active service, will contribute the seed tubers, as he did last year.

CROPS AND STOCK ON THE HOME FARM.

INCREASING THE AREA FOR CORN CROPS.

THE ploughing of grass, Saintoin, and leys for cereal crops is a matter of extreme urgency, and should engage the serious attention of farmers, large and small. Many such fields would be much more profitable under the plough. Many pastures have not been sown with seed of suitably selected permanent grasses, but are what is locally known as having "fallen down" to grass from a worn-out Sainfoin or Clover ley, and all too often the turf is composed largely with Couch and other obnoxious grasses and weeds. They are dressed occasionally with manure, and receive surface attention, consequently a little improvement is manifest, but a full crop of hay and grass is not forthcoming from such fields.

In this county all Sainfoins over five years old, and all leys, are to be ploughed and sown with cereals before March 31. In some districts Sainfoin will produce a full crop of hay for eight years, provided the ground was suitably prepared for sowing the seed. The order to plough in such circumstances is a trifle hard on some farmers, but such grass land is in the minority, and on the whole it is a wise order, and will increase the corn acreage considerably.

In the same way the ploughing of all leys—whether of Cover, Italian Rye Grass, or other annual grasses, that gave a crop of hay last season, will result in a considerable increase of the corn crops also.

Those who are, or are about to be, similarly engaged, and intend to sow Oats, should plough the heavier soils first, as more time is required to bring heavy land into a working condition for sowing than in the case of light soils, such, for example, as over the chalk. Light soil should be ploughed at the end of February or early in March, and sown forthwith. The subsequent crop will better escape injury from wireworms, as these pests will be occupied among the roots of the turf. In the meantime, by the aid of tertil sets, the Oat plant will grow rapidly, and once the second pair of leaves is formed the plant is practically safe from attack. In the case of turf, or ley ground carefully skim the surface to ensure the grass being buried when ploughing 5 inches deep. Some ploughmen do not turn the furrows over, but set them up edgewise, thus enabling the grass to grow and at the same time forming a deep opening in which the seed drops, and too often fails to germinate. Use a heavy pressure behind the plough in the furrows to ensure a firm seed bed.

Sainfoin is often densely infested with Couch grass, and some think it is better to summer fallow such ground to destroy the Couch and sow with Wheat in the autumn. If an Oat crop is grown this year much of the Couch grass will be destroyed when ploughing after harvest, and the Couch is more easily brought to the surface collected and burned. The land will then be clean for a crop of roots the following year. In this way a crop of Oats will be obtained this year amounting to at least ten sacks per acre. Green Couch is much more difficult to remove from the soil than that partly decayed. The ground should be dressed with fertilisers at the time of sowing the Oats, and the manures should be obtained at once. Four cwt. of agricultural salt, 3 cwt. of superphosphate (30 per cent. strength), and 1 cwt. of sulphate of ammonia per acre should give good results.

MANGOLDS IN CLAMPS.

As a rule the Mangolds are keeping well this season, but the roots will soon commence to sprout, which, if allowed to continue, would exhaust much of the nutriment in them. The admission of air to the roots by the removal of the soil covering will give a check to growth. Some few of the roots that were subjected to frost when lying in heaps in the fields, or that were handled during frosty weather and bruised, and decaying, and should be removed. This goes to show that a slight frost may injure the roots if they are disturbed in a frozen condition. It is better to allow them to remain undisturbed until the frost has thawed. The sound roots may be fed to sheep and pigs. *E. Molyneux, Swainmore Park Farm, Bishop's Waltham, Hampshire.*

SOCIETIES.

ROYAL HORTICULTURAL.
Scientific Committee.

FEBRUARY 12.—*Present:* Mr E. A. Bowles (in the chair), Dr Rendle, Messrs. Worsdell, Hales, Allard, Baker, Fraser, Holmes, and Chittenden (hon. sec.).

Diseased Damson-stone.—Mr. Bowles showed a stone of a Damson having four instead of two edges, which Mr. Worsdell took for further examination.

Fungus on Gardenia Roots.—Mr. Fraser showed specimens of Gardenia roots with galls upon them produced by the root-knot eelworm, Heterodera radicicola.

Food Value of Fruits.—A discussion took place on the relative food values of common fruits. The Grape has a very high food value, and the Apple also stands very high in this respect.

SCOTTISH HORTICULTURAL.

FEBRUARY 5. The first ordinary monthly meeting of this Association was held on the 5th inst. Mr. King, senior Councillor, occupied the chair, and introduced the new president, Mr Robert Fife, who delivered his inaugural address, taking as his subject "Food Production in War Time." Mr. Fife referred to the acuteness of the present shortage of food, and emphasised the urgent need of more intensive cultivation in order to maintain our supplies, not only on the farm, but by means of allotments and the employment of all available ground in private gardens. With regard to the subject of manuring, he laid great stress on the fact that there was a vast amount of loss of fertilising ingredients in our present system of sewage disposal.

Obituary.

REV. CHARLES HENRY BULMER.—The Rev. Charles Henry Bulmer, M.A., passed away on February 15, in his 85th year. For 49 years he was rector of Credenhill, Herefordshire, almost within sight of the former realm of Thomas Andrew Knight at Wormsley. Up to the last he was a keen pomologist and rosarian, and was one of the founders of the National Rose Society. The effect of his work in pomology is to be seen in many plantations of fruit trees, and in more lasting mode in the first great work on pomology that this country has produced: the *Herefordshire Pomona* of Dr. Graves Bull and Dr. Robert Hogg. We understand that it was largely due to his initiative that this work was ever produced, and many of the specimens which were figured therein were selected by him. He was a constant contributor in former days to *The Journal of Horticulture*, over the *nom de plume* of *Herefordshire Incumbent*. His spirit of enquiry led him to experiment in the making of cider and perry, and further to imbue his two sons with his interest in the subject, an interest which has culminated in the growth of what is probably the largest cider works in existence. Beloved by all in his old parish, gentle and retiring, he was nothing in helping others to the love that he had acquired.

GÉRARD OP'T EYNDE. We regret to announce the death of Monsieur Op't Eynde, a well-known fruit grower of Hoeylaert, near Brussels. Monsieur Op't Eynde was not only a grower himself, but for very many years he had taken a great interest in the associations of fruit growers in the district in which he lived. He filled for twenty years the office of president of the Syndicats of Belgian Grape Growers, and that of president of the Brussels Horticulturists' Auction; he was also vice-president of the Belgian Horticultural Council. Deceased was the step-father of Monsieur H. van Orshoven, who came to this country at the commencement of the war, and has charge of the London office of the Belgian Ministry of Agriculture. Monsieur van Orshoven was for some time on the staff of the *Gardeners' Chronicle*, and conducted the French and Belgian page published in this paper for the benefit of Belgian gardeners in this country for over a year after the war broke out.

MARKETS.

COVENT GARDEN, *February 20.*

Cut Flowers, &c.: Average Wholesale Prices

	s. d.	s. d.
Arums—		
— (Richardias), per doz. blms.	4 0– 5 0	
Azalea, white, per doz. bunches	5 0– 6 0	
Camellias, white, per doz.	2 6– 3 0	
Carnations, per doz.		
— blooms, best American var.	3 0– 4 0	
Croton leaves, per bun.	1 3– 1 6	
Daffodils (single), per doz. bun.—		
— Emperor	9 0–10 0	
— Golden Spur	8 0–10 0	
— Henry Irving	3 0– 4 0	
— Princeps	4 0– 6	
Freesia, per doz. bun.	3 0– 4 0	
Heather, white, per doz. bun.	9 0–12 0	
Lilium longiflorum, long	4 0– 5 0	
— Lancifolium album, long	3 0– 4 0	
— — rubrum, per doz. long	4 0– 5 0	
— — short, per doz. blooms	3 0– 4 0	
Violets, per doz. bun.	9 0–12 0	

French Flowers: Average Wholesale Prices.

	s. d.	s. d.
Anemones, double pink, per doz. bun.	–	
— single, mixed	9 0–18 0	
Mimosa (Acacia), per basket	6 0– 8 0	
Narcissus, per basket—		
Paper white	6 0– 8 0	
Narcissus, con.—		
Glorosa	8 0–10 0	
— Double Yellow	6 0– 8 0	
— Soleil d'Or	4 0– 6 0	
Ranunculus, scarlet, per doz. bun.	15 0–18 0	
Violets, Parma, per bun.	5 0– 6 0	
— Single	3 0– 4 0	

Cut Foliage, &c.: Average Wholesale Prices.

	s. d.	s. d.
Adiantum (Maiden hair Fern) best, per doz. bun.	8 0–10 0	
Asparagus plumosus, long trails, per half dozen	2 6– 3 0	
— — medium, doz. bunches	18 0–21 0	
— Sprengeri	10 0–15 0	
Berberis, per doz. bun.	5 0– 6 0	
Carnation foliage, doz. bunches	4 0– 5 0	
Cycas leaves, per doz.	3 0– 6 0	
Ivy leaves, per doz. bunches	2 0– 3 6	
Moss, sprgs bun.	7 0– 8 0	
Smilax, per bun. of 6 trails	9 0– 2 6	

REMARKS.—A plentiful supply of cut flowers continues to arrive from France and the Channel Islands. These consignments arrive in better condition despite the rougher weather as some of the flowers are from four to five days on the journey. Arrivals of French flowers continue very erratic. Carnations are now more plentiful and easier in price for the month of bloom as only of medium quality. The choicer varieties are Enchantress, Delight, Lady Margaret Dobbie, Rose Pink, Winsor, Beacon, Comet, Triumph, and Cardinal (crimson). A few white, mauve and bronze Tulips are still to be had, their prices remain firm. A larger supply of Roses would be welcomed. A few blooms of Sunburst are offered at exceptional quality. There is an abundant supply of Single Violets and Snowdrops. Primroses are making their first appearance. There is now a good supply of English-grown Daffodils and Phenomenal Narcissus. Arums (Richardias) and Lilium longiflorum are sufficient for the demand. Lily of the Valley is scarce in character and the condition good. Accumulations have been arranged for a limited quantity of pot plants and pots. Ferns and Palms are in short supply. The chief flowering plants are Cineraria, Daffodil, Cyclamen, Margueritas, Begonias, Primula and Azalea.

Vegetables: Average Wholesale Prices

	s. d.	s. d.
Artichoke, Chinese (stachys) per lb.	1 –	
— Globe, per doz.	1 0– 1 6	
— Jerusalem, per bushel	2 0– 2 6	
Asparagus (English), per bundle	1 0– 12 0	
— National, per bundle	12 0– 7 0	
— (Paris Green), per bundle	8 0– 9 0	
Beans, French (Haricots), per lb.	1 6– 2 0	
Beetroot, per bus.	2 0– 2 6	
Bay (specimens)	6 0– 7 0	
Cabbage, per tally	1 6– 2 0	
Carrots, new, per doz. bunches	1 0	
— per bag	4 0– 5 0	
Cauliflowers, per dz.	6 0– 8 0	
Celery, per bundle	1 6– 4 0	
Chicory, per lb.	0 6– 0 10	
Cucumbers, per doz.	1 6– 2 0	
Endive, per doz.	1 6– 2 0	
Garlic, per lb.	– –	
Greens, per bag	2 0– 2 6	
Herbs, per doz. bun.	3 0– 4 0	
Horseradish, per bun.	3 0– 5 0	
Leeks, per doz. bun.	2 0– 0 0	
Lettuce, Cabbage, per doz.	0 10– 2 0	
— Mignonette, per doz.	1 6– 2 0	
Mustard and Cress, per doz. punnets	1 – 1 6	
Onions, per bag	2 0– 2 6	
— (pickling), per quart	0 0– 0 0	
— Spring, per doz. bunches	0 0– 0 0	
— Welsh, per doz. bunches	0 0– 0 0	
Parsley, per doz.	0 6– 0 0	
Parsnips, per bag	0 0– 0 0	
Peas, per lb.	0 6– 0 0	
Potatoes, per cwt.	3 0– 3 6	
Radishes, per doz. bunches	1 0– 1 6	
Rhubarb, per bundle	1 0– 2 0	
Salsafy, per bundle	1 0– 1 6	
Scorzonera, per bundle	1 0– 1 6	
Seakale, per punnet	1 0– 1 6	
Shallots, per lb.	0 6– 0 8	
Spinach, per bag	1 6– 1 8	
Tomatos, per lb.	0 6– 0 8	
Turnips, per bag	1 6– 2 0	
Watercress, per doz.	0 10– 1 0	

Fruit: Average Wholesale Prices.

	s. d.	s. d.
Almonds, per cwt.	170 0	–
Apples:—		
— cooking, per bus.	10 0– 20 0	
— Russets, French, in cases of about 60 to 70 lbs.	34 0– 42 0	
Dates, per box	3 4	–
Grapes, Black Alicante, per lb.	0 0– 0 0	
— Almeria, per barrel (42 doz. lbs.)	4 0– 70 0	
Grapes, con.—		
— Gros Colman, per lb.	4 6– 8 0	
Lemons, per case	38 0– 46 0	
Nuts, Barcelonas, per bag	150 0	–
— Cob, per lb.	1 3	–
Oranges, per case	75 0–120 0	
— navel, per case	55 0– 60 0	
— Tangerines, per box	14 0– 15 0	
Walnuts, kiln dried, per bag	52 0–130 0	

REMARKS.—The market continues to be fairly well supplied with English Apples. Supplies of French Apples have increased during the week. Grapes are a much shorter supply. Spanish White (Almeria) Grapes are fairly plentiful, sold in barrels of about 42 lbs., also by the 12 lbs. Oranges and Lemons are to hand in limited quantities. The principal forced vegetables on sale are Asparagus (English and French), Beans (Dwarf), Potatos, Mushrooms, Cucumbers, Seakale and Peas. Some good samples of Rosen Cauliflowers are on offer. Vegetables and roots are plentiful.

F. H. Bo Covent Garden Market, February 20, 1918.

DEBATING SOCIETIES.

READING AND DISTRICT GARDENERS.

A Chrysanthemum Party presided at the meeting held on Monday, January 28. The subject of the discussion was the three best cropping and cooking Potatos in the first early, second early and maincrop sections, introduced by Mr. H. C. Loader, The Gardens, Ethelgh Park. The number of the votes given by the members were: First early, May Queen (29), Sharpe's Express (10), Empress (10) and Ringleader (10). Second early, Windsor Castle (29), British Queen (10) and Epicure (5). Maincrop, Arran Chief (19), Epicure (19), and King Edward VII. (16). During the evening Mr. Shuttleworth, from the Food Production Department, gave a short address on Potato-spraying.

BATH GARDENERS'.

The first paper read to members of the Bath Gardeners' Debating Society during the present session was by Mr. W. Scrimgeour, entitled "The Right Hon. Walter Long." Reed Abbey, Mr. T. Parr and Mr. Reed Lower a good contribution. Mr. Scrimgeour dealt with matters relative to fruit generally, and discussed various methods of Potato production in the north and elsewhere, as well as the selection of seed Potatos and the cultivation of the Onion and the Pea. On the president and four ordinary months the above selected and the Silver Medal for the best exhibit of the greatest number of varieties in pots was finally awarded to Mr. H. Parr.

CATALOGUES RECEIVED.

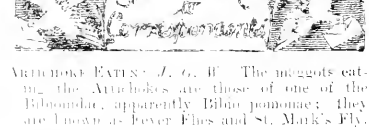
Thos. [illegible] Reed Bo[illegible] Seed[illegible]

A. Dickinson & Sons, King's Road, Chelsea, S.W.—Seeds.

GARDENING APPOINTMENTS.

MR. L. JONES, for 7 years Gardener to Col. W. A. W. Lawson, Sawdon Lodge, McPon Mowbray, as Gardener to C. C. CRUSE, Esq., Langwood Hall, Newark, Nottinghamshire.

MR. S. LEGG, for 5½ years Gardener at Dalton Hall, Rydal, and for 1 year at Newstead Abbey, and previously for 5½ years under Mr. F. JOHNSON, as Gardener to Lt.-Col. NEVILLE CROOME, Walter Priory, York.



ARTICHOKE EATEN.—*J. G. H.* The maggots eating the Artichokes are those of one of the Bibionidæ, apparently Bibio pomonæ; they are known as Fever Flies and St. Mark's Fly.

FRUIT STOCKS.—*Subscriber.* The Apricot is raised from seed as well as by budding or grafting. Various stocks are used to suit different varieties of the fruit. The Brussels, Mussel, Black Damask, and St. Julien Plum stocks are used for budding or grafting, special knowledge being necessary for selecting the stock most suitable for the variety of Apricot to be raised. Peaches are best raised by budding the Black Damask and St. Julien Plum stocks being among the most suitable. Plums are raised by budding and grafting. The Mussel is probably the best stock for standard Plums. The Myrobalan (from cuttings) is also used. The "Common Plum" is named by one authority as a suitable stock for dwarf trees.

GRAPES: *W. T. W.* After you have thoroughly cleansed the house, dress the rods with Gishurst compound, rubbing it well in with a stiff brush. Prick up the border and top-dress it with Le Frutier. Close the house, but do not use fire heat, for a fortnight, then use a little artificial warmth to keep the temperature of 50° at night, gradually increasing to 65° by the time the vines come into flower, with a rise of 10° during the day, with ventilation. Examine the border at short intervals, and water it copiously once a fortnight or once a month, according to the nature of the soil.

NAMES OF FRUITS: *F. S.* Striped Apples, Colonel Vaughan (syn. Kentish Pippin); greenish, Isle of Wight Pippin.

NAMES OF PLANTS: *R. H.* Veltheimia viridifolia.

PEACHES: *W. T. W.* Peach trees in late houses should be pruned at once, and no more shoots should be left than are necessary to secure an evenly balanced tree; train them about 4 inches apart. Tie the shoots to the trellis and syringe the trees with quassia extract. Keep the house cool until the trees come into bloom, when a dry, buoyant atmosphere should be maintained, and a temperature of 50°, with ventilation. Fork the surface of the border lightly, and dress with Le Fruitier manure, according to directions, using a little fresh compost as a topdressing. Syringe the trees regularly after the fruits are set, and see that the roots never suffer for want of water.

POTATOS: *J. K.* The varieties Keer's Cigarette and Skerry Blue are not listed in any of the leading Potato merchants' catalogues, and we do not know where they can be procured. They may still be grown in some private gardens.

PROTECTING APPLE TREES: *Kildare.* Hay bands would not injure the Apple trees, and these could be smeared over with tar, but they would harbour many insect pests during the winter months, and last only for one season. The cheapest and best protection from sheep or rabbits is 1½-inch mesh wire netting, 2 to 3 feet high, cut 9 inches to a foot wide. Place two stakes to the tree and fasten the wire to them; the wire should be sunk a few inches in the ground.

SEAKALE: *A. J. C.* A punnet of Seakale as sold in Covent Garden Market contains 3 lbs. in weight—approximately one dozen crowns.

SULPHUR ON PIPES: *J. H. P.* Flower of sulphur painted on hot-water pipes are injurious to Peaches in the early stages of their growth, and will kill soft-wooded plants, such as Calceolarias and Cinerarias. After growth is matured, sulphur may be used with advantage if the pipes are not made too hot; but be careful to see that the foliage is dry when the sulphur is employed. It would not be particularly efficacious as a preventive of disease in Tomatos, and for this purpose the plants should be sprayed with a suitable specific. Syringe the plants occasionally with quassia extract and dust with soot to protect them from rabbits.

TOMATOS: *W. T. W.* The disease may possibly have been present in the fruits, and as it is impossible to remove the soil, this should be dressed as you suggest and left at least a fortnight before planting. Thoroughly cleanse the glass house, and, if empty, burn a few handfuls of sulphur in it. Mix the bonemeal with the road scrapings, and keep the potash and fish manure for dressing the borders later, when the plants are in fruit.

Communications Received.—F. W. O.—W. M. M.—Mrs. E. F. R.—J. W.—J. C. W.—R. C. P.—T. C. S.—T. E. M.—J. F.—A. J. C.—J. D.—C. C.—R. C.—C. J. C.—J. B.—A. S.—S. B. A.—C. P. & T. J.—T. E. T.—C. C.—H. E. D.

THE
Gardeners' Chronicle
No. 1627.—SATURDAY, MARCH 2, 1918.

CONTENTS.

ILLUSTRATIONS.

COLLECTING TREE SEEDS.

IN pre-war times the great bulk of forest tree seeds used in this country was obtained from Continental sources, but for several years to come we shall be compelled to rely mainly on seeds from our own woods and plantations. With a well-arranged system of collecting and harvesting tree seeds there is no reason why there should be a scarcity, as we have ample supplies of old trees of the various kinds that will be largely pollarded in the near future, from which the necessary amount of seeds may be collected. Great care will, however, be necessary in choosing the particular trees from which seeds are to be collected, the best being produced by healthy trees in the prime of life and grown in conditions favourable to their perfect development. Unhealthy trees will often bear a heavy crop of seed, but although the inducements to collect such are great, where quantity and not quality is the point of consideration, they should be discarded, and those from the most robust specimens carefully selected. Trees growing in mining districts or wherever atmospheric impurities are present should be ignored by the seed collector, as should any others growing in unfavourable soil and climatic conditions.

Such trees as the Scots, Corsican, Austrian, and Weymouth Pines, the Larch and Silver Fir, produce cones freely; while amongst hardwooded species, the Ash, Oak, Beech, Elm, Poplar, and Birch may be propagated in large quantities from home-saved seeds.

Regarding the best way of collecting tree seeds little need be said, the exigence of the case pointing out the best method to be adopted. The seeds of not a few trees may be collected as they fall, and this especially applies to those of the Oak, Beech, and Elm. The seeds of these trees may be swept into heaps and gathered in quantity from beneath desirable trees.

In the case of the various Coniferae this method of seed-collecting will not answer—indeed, in the majority of instances such seeds should be gathered, or, rather, picked from the trees, just before they become fully ripe, as in falling the seeds get loose from the cone-scales and are lost. When collecting the cones of Coniferous trees, a long, light, hooked staff with which to draw the branches towards one will assist in procuring an abundant supply. A bag or satchel should also be used by the seed-collector, and into this may be put such kinds of cones as fall readily apart, and from which the seeds easily escape and are lost. Sometimes, as in the case of rare seeds and when only a few cones are borne near the top of the tree, the seed-collector must have recourse to climbing up the stem and branches; but in such cases, so as to avoid injury to the bark, he should be provided with a pair of rubber shoes or slippers. Great care is required in the collecting of such seeds as those of Abies nobilis and A. Nordmanniana, the cones, when fully ripe, falling to pieces on the slightest touch. This, however, applies equally to almost every species of Abies, whereas, with the Pines and Spruces, the cones remain intact for an indefinite period of time, and that, too, although the seeds may have fallen out on becoming ripe.

After being collected, the seeds of all trees, except those which are mixed with sand to promote the rotting of the seed cases, should be thinly and evenly spread out in a sunless spot until thoroughly dry. They may then be deposited in a cool, airy place, and in thin layers, until wanted for sowing. As much of the chaff covering of the heap as is all important, and should never be neglected. The smaller and less common seeds may, for convenience, be hung in calico bags, but these, too, should be occasionally examined to ascertain if they are damping or heating.

The number of plants of various kinds that may be expected from a bushel of seed of average quality varies very much. The quantity may be approximately given as follows:—Horse Chestnut, 2,500; Oak, 6,000; Spanish Chestnut, about 3,000; Walnut, 5,000; Norway Maple, 12,000; Sycamore, about 12,000; Ash, 14,000; Beech, 10,000; Elm, 1,000; Birch, fully 16,000; Holly, 17,000; Scots Fir, 9,000. To 1 lb. of seed: Spruce Fir, about 9,000; Larch, 3,000; and the Cluster Pine, Silver Fir and some others, about 500 upwards.

For convenience in regulating orders for sowing, the following table will show at a glance the approximate and relative number of seeds of the various commonly cultivated forest trees contained in 1 lb. weight:—

Abies nobilis	About	19,400
Abies Nordmanniana		10,000
Ash		6,500
Beech		2,700
Douglas Fir		95,200
Horse Chestnut		36
Hornbeam		9,963
Larch		65,000
Lawson's Cypress		131,400
Lebanon Cedar	About	10,800
Norway Maple		4,000
Oak		100
Pinus austriaca		35,000
Pinus Laricio		45,000
Pinus Pinaster		12,000
Pinus sylvestris		75,000
Spruce		64,500
Silver Fir		14,960
Sycamore		4,624
Walnut		36

These figures must only be taken as approximate, the seed of various trees of the same species seeming to vary in number to the pound in a marked degree. The results of careful analyses of one or two kinds may be cited as examples. In one case the number of seeds in 1 lb. weight of Scots Fir was 69,600, while in another it had increased to 90,600; and in the Larch the numbers were 53,000 and 68,000. These differences are, however, readily explained by the individual seeds being heavier in one case than in another, probably owing to the age and health of the tree from which they were collected, the situation and exposure to which it was subjected, and other circumstances. However, for all nursery purposes the above figures may be accepted as a fair standard.

The time of collecting and the after-management of the different forest seeds vary so much that a brief description of those kinds most commonly planted will be found useful.

Alder seed should be gathered from the trees in October, and sown in spring—say, May.

Ash seeds are ripe in October, when they should be collected and kept in moist sand during the winter, to be sown in March.

Austrian, Corsican and Weymouth Pine seeds are treated in every respect like those of the Scots Fir, varying the kiln heat according to the looseness of the cone-bracts.

Beech seeds are collected in October and November, placed in sand, and sown in April. The young plants are readily affected by frost, and should, therefore, not be sown earlier than the time mentioned.

Birch seed should be collected from the trees just before it becomes ripe in August, else it is scattered broadcast, and lost for cultivation. March is the time of sowing.

Cupressus Lawsoniana seed is usually ready for collecting in October, but should not be sown before the first week in April.

The seed of Douglas Fir is, in most cases, readily removed from well ripened cones by threshing or by pulling the cone to pieces, but, in some instances, particularly where the quantity is large, kiln-drying is resorted to. The seeds are ripe in December, and should be gently watered and sown in May.

Elm seeds are ripe in June, when they may either be sown at once, or mixed and kept in stock for planting in March or April.

Hawthorn seed, or berries, may be sown when collected, or the outer coating rotted off by keeping them during the winter in moist sand.

Hazel Nuts may be collected in autumn and sown at once, or kept till spring.

Holly berries require to be placed in sand for about eighteen months to cause the fleshy outer coating to rot, and may be sown in March. The mixture of sand and berries, which should be in about equal proportions, should be turned frequently. They are usually sown with the sand with which they have been mixed.

Horse and Spanish Chestnut seeds may be taken together, the collecting and sowing being nearly alike in both cases. They are ripe by the beginning of November, and may either be sown at once or kept till spring. One seed to 4 square inches will be close enough to plant.

Acorns may be gathered or swept from the ground in November, and either sown at once or stored in a cool, dry place till spring. One Acorn to every 4 square inches will be ample in the seed-bed. Sow in spring or autumn.

The cones of Scots Fir are better not collected till early in January, and the time may even be extended to March. When quite ripe they have changed from bluish-green to a light grey colour. As the cones part tardily with the seeds artificial means have to be resorted to. This consists in placing the cones thinly over a kiln heated to a temperature of from 75° to 112°. They should be turned every third hour, and after about thirty hours the kiln should be

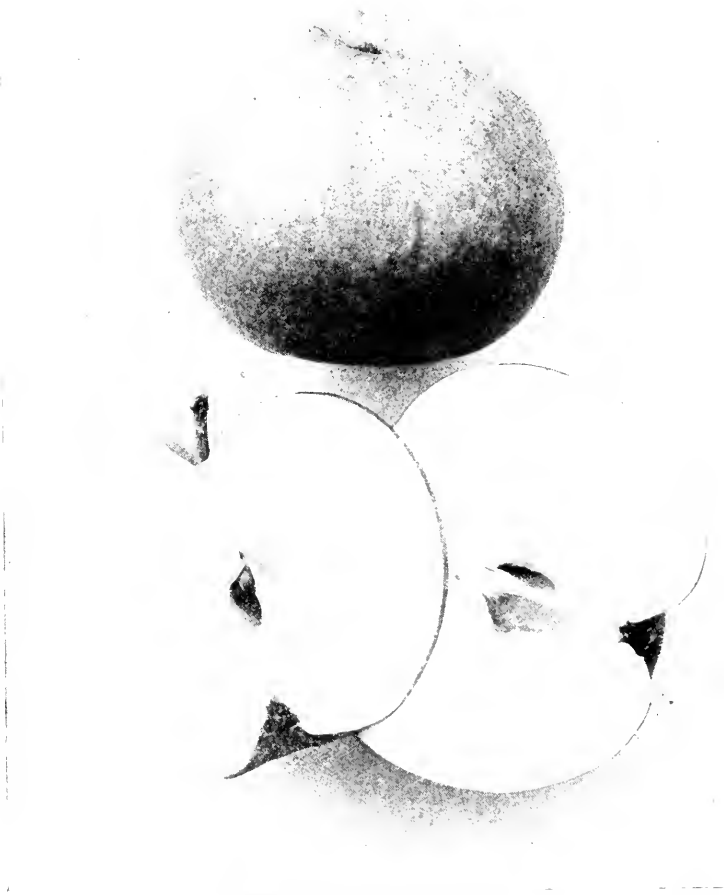


Fig. 37.—Dessert apple Laxton's Superb

Larch cones, when ripe, are of a rather bright brown colour. They require to be collected from the trees. This should not, however, be done till spring, though occasionally they are gathered in December. The scales part from the seeds far more readily than those of the Scotch Fir, and consequently require less heat when in the kiln.

Maple seeds are ready for collecting about October, and should not be sown till the beginning of April.

Mountain Ash, indeed all members of the Pyrus family and others of a like kind, require the berries to be placed in sand, and when the outer fleshy coating has rotted away they may be sown either in autumn or spring.

cooled down and the cones extracted as quickly as possible. By beating with a flail the seeds are readily removed from the cones, and it is best to do this before the latter have cooled or immediately they are removed from the kiln. The seeds are then swept together and collected, and stored until needed for sowing. When not required for sowing at once, the seeds should be thinly spread out on the floor and slightly moistened with water from a fine-rose watering can. They should then be turned about until perfectly dry before being stored.

Silver Fir seed does not require much, if any, artificial warmth to cause it to part from the cone. By placing the cones in the sunshine, and beating and turning them freely, the seeds come out without much trouble. In all cases, however, wherever possible, it is wise policy to dispense with artificial heat or kiln-drying, as, unless this is carried out most carefully, the vitality of the seeds is greatly impaired.

Sycamore seeds are ready for gathering in October, but should not be sown till the end of March or beginning of April.

Walnuts are collected, when ripe, in autumn, and sown in late spring.

Yew seeds are usually washed free of the pulpy matter before being sown.

In the case of large seeds, such as those of Araucaria imbricata, Pinus Sabiniana, and P. macrocarpa, the best way is to cut the cones to pieces and carefully remove the seeds, but this should be performed with great care, so that the hard seed coating may not be injured.

With Conifers in general I have invariably found it the best plan to allow the seed to remain in the cones until wanted for sowing. By keeping the cones in a cool, dry place, and occasionally turning them, there need be little fear but that the seeds will turn out well. *D. Webster.*

NEW APPLES FROM BEDFORD.

In the issue for October 20, 1916, p. 163, we gave some particulars of the work extending over a period of twenty-five years done by Messrs. Laxton Bros. in the raising of seedlings of various kinds of fruit. On a visit to the nursery we were shown some thousands of crosses which had been made, principally amongst Plums and Apples, with the names of the parents, dates of pollination, and other information recorded in the pedigree book. In the autumns of 1915, 1916 and 1917, the firm showed a considerable number of the new fruits at the fortnightly meetings of the Royal Horticultural Society, some of which gained awards. At the meeting on January 29 last they exhibited a number of the seedling Apples, which attracted attention from fruit growers. It was unfortunate that the fruits were not in first-rate condition, circumstances having made it imperative to gather them before they were quite ripe. In consequence the majority presented a somewhat shrivelled appearance, and were not in the best form. The flavour of most of the Apples was exceptionally good, and the Committee expressed a wish to see certain of the varieties again another season, when it was hoped they could be shown at their best.

The principal parents were Cox's Orange Pippin, King of the Pippins, Court Pendû Plat, Ribston Pippin, and Wyken Pippin. A handsome variety, a cross between Wyken Pippin and Cox's Orange Pippin, is named Laxton's Superb (see fig. 38). The fruit is rather larger than that of Cox's, and, as will be seen on reference to the illustration, it is of somewhat similar shape. The tree is stated to be a very heavy cropper, and the variety should furnish a valuable late-keeping dessert Apple. Another seedling of extremely good flavour was named W. Watson; it was raised from Court Pendû Plat crossed with Cox's Orange Pippin, and is, apparently, a very late-keeping variety. The fruits are of medium size.

A promising unnamed seedling was raised from Allington Pippin crossed with Cox's Orange Pippin. The fruits take a very high colour, and are about the size of Cox's Orange Pippin, with a flavour almost equal to that fine variety. The season of this fruit is said to be from November to February. A variety of very sweet flavour, of medium size, is the result of a cross between Court Pendû Plat and Ribston Pippin. The flesh is firm, and of a greenish-yellow colour, which generally betokens good quality in an Apple. The first-named parent

was used with the object of securing late blossoming, which is an advantage in enabling the flowers to escape injury by spring frosts. The "Wise Apple," as Court Pendû Plat is called on account of its late-flowering habit, was also used as a parent with other varieties, including Cox's Orange Pippin.

ORCHID NOTES AND GLEANINGS.

CYMBIDIUM ALEXANDERI WARREN HOUSE VARIETY.

A number of small seedling plants flowering for the first time in Mrs. Bischoffsheim's gardens at The Warren House, Stanmore (Orchid grower Mr. H. Haddon) well show the beauty and variation in this favourite cross between C. insigne and C. eburneo-Lowianum. The fine white or blush flowers vary considerably in the rose or light purple markings of the lip; in one form the ground colour is pale yellow with red-brown markings. The most remarkable is The Warren House variety, which has flowers of wax-like texture blush-white in colour, with a slight rose line in the middle of the petals. The base of the lip is closely lined with deep claret colour, which merges on each side in front into patches of dark claret-purple. The front lobe is white, with dark purple spots within the margin.

ODONTOGLOSSUM FASCINATOR.

A flower of this cross between O. crispum and O. Adrianae (crispum × Hunnewellianum) is sent by Mr. Jas. Renwick, gardener to Colonel Leith, Greycourt, Riding Mill-on-Tyne, in whose gardens it was raised. The flower, which is equal to O. crispum in size, has equally broad sepals and petals of a clear white, the sepals bearing several very large, bright claret-coloured blotches, and the fringed petals a cluster of blotches of the same colour, with smaller spotting on the basal half. The lip still bears distinct traces of O. Hunnewellianum in the fimbriate margin with reddish markings, and the curled, apiculate apex. A large chestnut-red blotch appears in front of the yellow crest.

HYBRID ORCHIDS.

(Continued from January 5, p. 3.)

Hybrid.	Parentage.	Exhibitor.
Brasso-Cattleya Fascinator	B. C. Digbyano Mendelii × C. Enid	Sanders.
Brasso-Cattleya Orion	B. C. Mrs J. Leemann × C. Enid	Sanders.
Cattleya Monarch Bryndir var.	Trianae × Empress Frederick	Dr Miguel Lacroze.
Cymbidium Atalanta	erythrostylum × Lowianum	Sanders.
Cymbidium Beryl	Lowianum × Pauwelsii	Armstrong and Brown.
Cymbidium Erin	grandiflorum × gattonense	Sir J. Colman, Bart.
Cymbidium Pearl	grandiflorum × Alexanderi	J. and A. McBean.
Cymbidium Shillianum	Hoiforbanum × Pauwelsii	Baron R. Schröder.
Cymbidium Virgo	Woodhamsianum × Pauwelsii	G. Hamilton Smith, Esq.
Cypripedium Amata	Minos Youngii × Mrs. Wm. Mostyn	Charlesworth and Co.
Cypripedium Ceto	Arthurianum × bellatulum	W. H. St. Quintin, Esq.
Cypripedium Curtingo	Curtisii × Flamingo	Duke of Marlborough.
Cypripedium Leucertis	Leeanum × Curtisii	Duke of Marlborough.
Cypripedium Lloyd George	Beechmanni × aureum Hycanum	J. Cypher and Sons.
Cypripedium Marga	Thalia × Beryl	Baron R. Schröder.
Cypripedium Snowdrift	niveum Goliath × Actaeus Bank House var.	W. H. St. Quintin, Esq.
Cypripedium Stone House	Leeanum Clinkaberryanum × triumphans	H. Worsley, Esq.
Laelio-Cattleya Asterias	L.-C. Bola × C. Hardyana	W. H. St. Quintin, Esq.
Laelio-Cattleya Cleodora	L.-C. Florentia × C. Maggie Raphael alba	W. H. St. Quintin, Esq.
Odontioda Blackeburne	Oda. beechensis × Odm. Her Majesty	C. J. Phillips, Esq.
Odontioda Norah	Odm. Arewerth × Oda. Schroderi	Charlesworth and Co.
Odontoglossum Alcimeda	Ossulstonii × Jasper	Armstrong and Brown.
Odontoglossum Apollo	Armstrongiae × Queen Mary	Armstrong and Brown.
Odontoglossum Bella	Vuylstekeae × Rossi	Armstrong and Brown.
Odontoglossum Berham	Vuylstekeae × Arachne	C. J. Phillips, Esq.
Odontoglossum Bruno	eximium × Hylandianum	Armstrong and Brown.
Odontoglossum Burns	nitidum × coeruleum	C. J. Phillips, Esq.
Odontoglossum Corona	eximium × Menier St. Vincent	Armstrong and Brown.
Odontoglossum Colonel Leith	Rossi × Uro-Skinneri	Colonel Leith.
Odontoglossum Gatton Emperor	Lambeauianum × hybrid	Sir J. Colman.
Odontoglossum Gatton Princess	Queen of Gatton × eximium	Sir J. Colman.
Odontoglossum Laurentia	Jasper × Olympia	Charlesworth and Co.
Odontoglossum Nora	illustrissimum × Dora	Armstrong and Brown.
Odontoglossum Orissa	ardentissimum × Hylandianum	Armstrong and Brown.
Odontoglossum Sybil	Thompsonianum × Arewerth	Hassall and Co.
Sophro-Cattleya Niobe	S.-C. Saxa × C. Octave Doin	Armstrong and Brown.
Sophro-Laelio-Cattleya Isabella Bryndir var.	S.-L.-C. Marathon × C. Fabia	Dr. Miguel Lacroze.

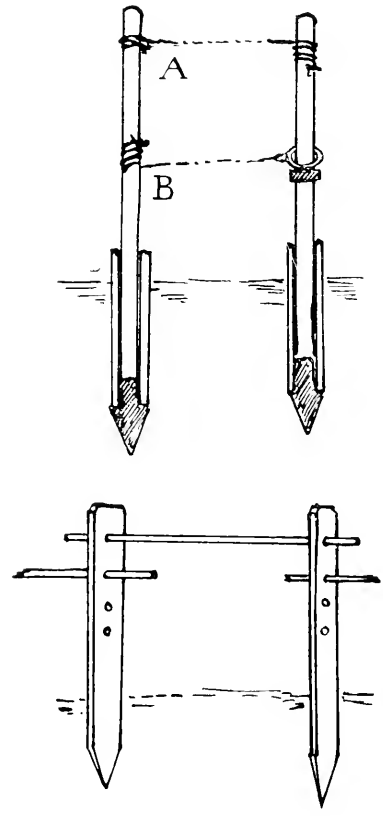


Fig. 39. Simple supports: above, iron piping inserted in sockets; below, wooden pegs for carrying cane rails.

CORRECTIONS.

For Brasso-Laelio-Cattleya Anzac var. Vesuvius, in the table on p. 3, Jan. 5, read Sophro-Laelio-Cattleya.
The parentage of Laelio-Cattleya Gatton Yellow recorded Mar. 11, 1916, p. 140, is Haroldiana × Ophir, not luminosa × Ophir.

SIMPLE SUPPORTS AND SHELTERS.

The support illustrated in fig. 1 (above) is a means of using a stretched string or cord, the tension of which can be regulated from time to time. My main use of it has been for Asparagus, which I have in long double-row lengths near a path; without support the winds we experience break off and bend down a number of the shoots. The uprights are made of old galvanised piping, which, when split by frost, can sometimes be removed from builders' yards for little more than mere thanks. The sockets for driving into the soil may be about 2 or 2½ feet long, and are plugged with a pointed piece of wood; if they are of 1-inch pipe, the main rods should be of ¾-inch piping, which slips nicely into them. The main rods may be 4 or 5 feet long, as required, remembering that a foot or more will be below the ground level. At *A* is shown the simple arrangement where only a single string is needed; the two ends are tied on the rods with a rolling hitch, and by rotating the rod the string is wound on to the desired tension; the small diameter of the rod and the friction in the socket prevents unwinding. In this case a fixed stick only is needed at the one end. If two strings are needed the arrangement *B* must be adopted to make independent rotation of either rod possible; a loosely fitting ring or hook of stout wire replaces the hitch of the string, and a collar of some material is wound and tied on to prevent the ring from slipping down; in the figure this collar would be at the letter *A* on rod, when the gear is as figured with the ring on the other. Ordinary coir twine is suitable, as it does not vary so much with weather, as, for instance, does manilla twine. It is little trouble to give an occasional twist should need be. In long lengths fixed stakes at about 10 yards or so distances will help to support and prevent sagging of the cord.

A very simple raidisseur, which is used on large Loganberry plantations about here, is easily made by blacksmiths. It consists of a flattened ring like the link of a chain made of flat bar iron. The flat sides are drilled to take a ⅝ or ¾ bolt, which, too, is drilled to take the end of the wire. The wire is passed through the upright support against which the "link" beds; stretching is done by turning the bolt and fixation by locking down the nut, two spanners being required. For small and temporary garden work a mortise slot cut in a piece of Beech or other hard wood might be of good service.

A simple support made of pegs and canes is shown in the bottom figure. In its shorter form I use it for supporting dwarf Beans which are to ripen seeds, though some have to undergo the cruder method of being swathed over from time to time. This swathing does not entirely prevent loss by moulds in wet weather, especially with the later sowings. In higher form it is useful for Broad Beans, which are apt to be blown down by gales; green Corn and other crops may be aided, and one year a Pea, which was said to be only M.30 high, grew to M1·25, and was saved from collapse by a few canes. The pegs may be 2½ to 3 or 4 or 5 feet in length, as the case may be; condemned cask staves do excellently for the former when cut and split, and last for years if occasionally doped with preservative. A series of holes is drilled about equidistant for the canes to pass; ⅝ inch gauge will suffice for the ordinary 4-feet and selected 9 feet canes. The method of use will be clear from the illustration, but when long canes are used a peg is preferably threaded on a cane at its middle. I use these supports in independent rows obliquely across narrow Strawberry beds for supporting the netting; there is nothing to catch the netting, which is readily thrown on or off. 9 foot canes are used, and the obliquity is guided by the width of the bed.

The same perforated pegs are useful for hold-

ing frost shelters when arranged as follows: Ordinary wire netting "Pea-guards," or pieces of wire netting of wider mesh and sufficient strength for the breadth selected, are bent to a slight arching only; strips of waterproofed paper are attached on the upper side by two or three zigzag lacings of twine. Canes of sufficient length to project somewhat beyond their ends are then tied at a few points along each side; the whole then looks somewhat like a Red Cross stretcher, but upside down. The ends of the canes are tucked into the holes in the pegs in succession along the row. Protection from early and late frosts may thus be obtained and from light and air; often plants thus sheltered in non-frosty weather will forge ahead of all others. *H. E. Durham.*

ON INCREASED FOOD PRODUCTION.

VEGETABLE PLANTS FOR ALLOTMENTS.

The Committee of the Elstree Cottage Gardens Society has set aside land for the sowing and raising of large numbers of vegetable plants suitable for growing on the adjoining allotments. The plants will be raised by a skilled gardener and sold at a reasonable price to allotment and cottage garden holders. The plan is well worthy of adoption generally, as the obtaining of plants in this way will save much trouble to those who are not in a position to attend to the wants of the seedlings. Seed from a reliable source can be purchased cheaper in bulk, and the best stocks and varieties obtained. Members of the Brassica family, Celery, Onions, and Leeks, are amongst those which can be easily raised under these conditions, and the venture should prove advantageous in every way to those concerned. *Edwin Beckett.*

DEGENERATION IN POTATOS.

Three seasons ago I bought seed of Up-to-Date Potatos from Cambridgeshire. The first year after planting the crop showed marked signs of weakness. As an experiment, planting from this stock was continued, and by the third season this stock had become so weak that many of the tubers produced but very little growth, which was infested by leaf curl; consequently the yield in small tubers was much greater than the yield in wan tubers.

Now by this extra yield in seed tubers one can see how easily trouble becomes multiplied, especially when planting is continued for a few seasons from a degenerate stock.

Last season I selected a few tubers from the healthiest roots of these Up-to-Dates, with the intention of giving them a trial this coming season; but I have been informed by a grower who has already tried this experiment that even from these selected tubers a percentage of weak plants will result each season, which is a proof that such stocks are suffering from inherent weakness.

Such degenerate stock should not be planted, or put on the market as seed tubers. It would be a boon to the cultivator, and assist in our food supply, if the authorities would immediately put an end to these weak stocks by buying the tubers for mixing with flour.

I do not imply that all stocks of Up-to-Dates are degenerating, but I do believe that when inherent weakness attacks an individual stock that no amount of selection or even a change in soil will bring back the lost vitality.

Last season good and bad stocks were planted as seed tubers were scarce: therefore it is highly important this season that growers, large and small, should make a thorough selection of their stocks of seed Potatos, and plant only from such varieties that grew and cropped well last season. *G. H. H. W.*

NATIONAL KITCHENS, ALLOTMENTS, AND PIGS.

Now that there is every prospect of the "National" kitchen materialising, I should like to suggest that, where possible, allotments be cultivated for their benefit by voluntary labour.

There must be a large number of people who have not sufficient time to cultivate allotments of their own, but who would gladly give one or more evenings a week, or even devote week-ends, to a healthy outdoor occupation, with the knowledge that they were thereby helping their country.

Most local authorities have allotment committees who could organise and supervise the movement.

Pigs might be kept on the refuse from the allotments generally, and the refuse might also be collected from any eating houses in the locality and fed to the pigs, instead of carted to the dust destructor. The pigs would also supply a certain amount of manure to the land.

This would, in a way, be a revival, on a small scale, of the old manorial system of land cultivation, and the workers might be encouraged and rewarded with a certain proportion of the produce of the land. *Sidney Oetzmann.*

SOY BEAN.

On p. 33 Mr. Lynch mentions the use of the Soy Bean as a Coffee substitute. Pailleux and Bois give high praise (*Le Potager d'une Curieux*, 1885) in this respect. "Le Soya est sans contredit le meilleur de tous les succédanés du café. Il donne un bon café au lait dont l'arome est sensiblement celui du Moka." In Haute Garonne, Tyrol, and other districts is it called "Fève de Café." "Si tous les cultivateurs consacraient tous les années dans leurs jardins un petit espace au Soya, ils obtiendraient sans bourse délier le café nécessaire au dejeuner de leurs familles." Sowing is advised from April 25 to May 10, after rain. The distance apart is most important, and should be not less than M.50 for S. d'Etampes, and M.35 for other sorts. This Bean is excellent as "flageolet." *H. E. D.*

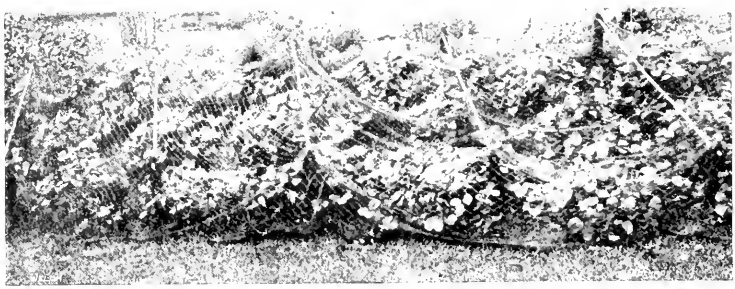


Fig. 40.—Simple method of protecting a strawberry bed.

(See p. 87.)

The Week's Work.

THE KITCHEN GARDEN.

By F. Jordan, Gardener to Lieut.-Col. Spender Clay, M.P., Ford Manor, Lingfield, Surrey.

Autumn-sown Onions.—Take the first opportunity, as soon as the soil is in a suitable condition, to transplant autumn-sown Onions. To obtain the best results select ground that has been trenched and manured as recommended for the summer crop. Home-grown Onions are sure to be a valuable crop next season, and if plenty of plants are available a large area of ground should be planted. Lift the plants carefully and put them in rows made 15 inches apart, allowing a space of 6 or 8 inches between the plants in the rows. Make the plants firm in the ground and water them, if necessary, directly after they are planted. Stir the soil between the rows on frequent occasions until the plants are well established.

Spring-sown Onions.—Make a sowing of Onions on the first favourable occasion, selecting ground which has been thoroughly prepared for this crop. Give the soil a light dressing of lime and a heavier dressing of wood ash, or any other suitable material of a light nature. Such applications will help to bring heavy soil into a workable condition. Fork the soil lightly and level the bed for sowing with a wooden rake. Sow the seed thinly in shallow drills made not less than 12 inches apart, and cover the seed by treading the displaced soil in the drills again. When the rows have been well trodden in this manner make the surface level again by the use of an iron rake. Onions raised from seed sown in boxes, as recommended in a previous calendar, should be transplanted before they become spindly. Place the largest seedlings in a box by themselves and continue to grow them in a light position in a house or frame having a temperature of 55°. Keep the atmosphere close until the plants are well established, and afterwards gradually increase the amount of ventilation to harden the plants in readiness for setting out-of-doors about the middle of April.

Leeks.—Prick out early Leeks, and make the principal sowing of this vegetable as soon as the soil and weather are suitable, in a similar manner to that advised for Onions.

Broad Beans.—Make another sowing of Broad Beans to obtain plants for early supplies. Choose the Windsor type, following with such varieties as Seville, Long Pod, and Bunyard's Exhibition where the larger-podded types are desired.

General Remarks.—March is one of the busiest months in the kitchen garden, and arrears of work should be completed forthwith in order that nothing may hinder future sowing and planting operations. On light soils work may be pushed forward in almost all kinds of weather, but heavy ground is best left alone until more favourable conditions prevail. Difficult weather conditions generally prevail at the beginning of March, but remember that opportunities lost now can never be regained this season. As the sun gains power the ventilation of houses and frames should be freely increased during the day, but close the lights early with sun-heat, and cover them at night with a suitable protection during very cold weather. On wet days examine roots in store and prepare soils in readiness for future use.

THE HARDY FRUIT GARDEN.

By Jas. Hudson, Head Gardener at Gunnersbury House, Acton, W.

Watering Fruit Trees.—If the soil in which fruit trees are growing is suspected of being dry let it be watered copiously. Trees, for instance, that are planted against walls in borders sloping to the paths, are very liable to become dry at the roots. In such instances water the trees freely before they come into flower. Apricots, too, may need this attention. The soil about young trees that were planted last autumn, having now become settled

to its former level, should be trodden when the ground is rather dry, and afterwards watered. Those planted against walls may be nailed or tied to the wires. Such trees should be pruned moderately the first season.

BRAMBLES.—The pruning and training of such berry-bearing plants as the Loganberry, the Phenomenal Berry, the American or Cut-leaved Bramble, and the Loxberry having been completed, the roots should be mulched with manure. I am most favourably impressed with the Loxberry; the plant repays well for generous treatment, and in ordinary conditions grows strongly. All of these berry-bearing plants should be given plenty of room to develop. Our plants are supported on strained wire fencing about 3 feet in height; the growths in our case are already nearly all tied, and a top dressing will be given in the general clean up that will follow. Being short of good stakes I have had recourse in some cases to the market gardener's method of tying the Raspberry canes in bundles. This system will answer well as the growths are not of excessive vigour or length.

SMALL FRUITS.—All plantations of Currants, Gooseberries, and Raspberries should be cleared of all rubbish and the ground "lightly" forked. In doing this keep a sharp watch for Blackbirds, that must be dug out entirely, even if a few roots of the bushes have to be disturbed in doing it. So far, I am pleased to note that but little harm has been done by the sparrows this spring; sometimes this bird is troublesome in destroying the buds, but sparrows also clear off some of the insect pests.

FRUITS UNDER GLASS

By W. J. GUISE, Gardener to Mrs. DEMPSTER, Eccle Hall, Newcastle, Staffordshire.

OUTSIDE VINE BORDERS.—Long litter placed on the border for protection, together with about 2 inches of the surface soil, should be raked off. The roots are getting active and they will be encouraged to grow near the surface by applying a top dressing of fine material. Place a light dressing of short manure over the fresh soil and, should wet weather continue, galvanised iron sheets, placed with a slight tilt, will afford protection from excessive rains, but the protection should be removed directly the weather is fine again. For the present it is not advisable to give vines fed by less a heavy dressing of farmyard manure. This best applied directly after the thinning of the bunches, and even then the borders should be protected during very wet weather.

EARLY PEACHES AND NECTARINES.—Watch the trees very carefully on which the fruit is set and swelling for aphis, and at the first signs of the pest take preventive measures, or the earliest growths will be ruined. If black fly once gets established around the base of the young shoots, one fumigation has hardly sufficient effect to destroy the insects, and a second fumigation is necessary, followed by a vigorous syringing. Disbud the young shoots freely; usually too many of the young growths of Peach and Nectarine trees are allowed to remain, with the result that the wood fails to ripen. No hard and fast rule can be laid down, but two, or at the most three, shoots are quite enough for furnishing the succeeding year's fruit-bearing wood. If too many shoots are left they will grow weak, the foliage thin, and the fruit, for want of sun and air, will be poor and flavourless. A good method is to allow one shoot at the end, one in the centre, and another at the base, on the upper side if possible, of every fruit-bearing shoot trained in. All the intermediate growths should then be removed. It is advisable to remove even the centre shoot should it interfere with the training in of the growth at the base, which is, of course, the fruiting shoot for next year. By tying the shoots close to the base and bringing them nearly flat against the trees, unsightly bends will be prevented. The thinning of the fruits, as with the shoots, is best done by degrees, removing the smallest and worst placed specimens. Fruits pointing upwards to the sun are the best situated, and may be left until the final thinning is done at the stoning period. The borders may require water, which should be supplied liberally in a tepid state.

LATE PEACHES AND NECTARINES.—The latest Peach and Nectarine houses should be freely ventilated during mild weather. The trees cannot be retarded much longer, as the buds are almost bursting into flower. At the following stage a little fire-heat should be used to keep the blossom dry. Sharp frosts on a few days made it necessary to open the valves a little at night, for it is not advisable to allow the temperature to fall much below 40°; still, it should not exceed that degree.

THE ORCHID HOUSES

By J. COLLIER, Gardener to Sir JEREMIAH COLMAN, Bart., Gatton Park, Reigate.

MASDEVALLIA.—Plants of strong-growing Masdevallias, such as M. Harryana, M. ignea, M. Veitchiana and M. Chelsoni that were not repotted in the autumn may be attended to now. Good specimens may be shifted into larger pots, doing this do not disturb the roots more than is necessary. Others that have overgrown their receptacles and have become bare towards their centres may be broken up, and, after cutting away all decayed parts, be potted in the small pots, or several pieces may be placed together in the same receptacle to form neat specimens. The pots or pans should be about three parts filled with drainage materials, and on top of the drainage should be placed a few pieces of Sphagnum moss. The compost should consist of a mixture of good fibrous peat and a little Sphagnum moss, and loam mould with a sufficient quantity of crushed crocks and silver sand to ensure porosity. In repotting, do not press the material too firmly about the roots. These plants do not like much root disturbance, and should be repotted only when the roots have filled the pots. The Orchid must not be shaded more than is necessary. As soon as the plants in the intermediate house, but during the summer the temperature of the cool house is most suitable to its requirements. Masdevallias of the Chimæra section, such as M. Bella, M. Wallisii, M. Candida, M. Backhouseana and M. Harryana should, if necessary, be potted "additional" [illegible] These plants are best grown in Teak wood baskets, and, as the flowers are produced on descending stems, crocks should not be used for drainage. A layer of Fern rhizomes laid over the bottom half serves the purpose of drainage well. The compost may consist of equal portions of Osmunda or A 1 fibre and Sphagnum moss, chopped rather finely. For a few weeks after root disturbance little direct watering will be needed, but the surroundings must be kept moist. After the plants become well rooted healthy specimens may be soaked two or three times a week, and sprayed overhead on frequent occasions to ward off attacks of small thrips and red spider.

PLANTS UNDER GLASS.

By E. HARRISS, Gardener to Lady WANTAGE, Lockinge Park, Berkshire.

TREE CARNATIONS.—Water Tree Carnations in flower rather more liberally than heretofore, and, to aid the development of good blooms, sprinkle a little concentrated fertiliser over the surface of the soil about once a week. The growths will need constant attention in tying to keep them upright. Some of the more promising of the old plants may be shifted into larger pots. Plants which were treated in this way here last year are still producing good flowers. It is important, however, that such plants be kept perfectly free from insect pests and rust disease. Regular sprayings with a suitable specific will keep the plants clean. Stop the growth of young plants as they become large enough, and support them to a neat stake. Souvenir de la Malmaison Carnations are growing freely, and if they are not already efficiently staked this should be done at once. Water must still be afforded with extra care till the pots are full of roots, and stimulants given sparingly. Houses containing Carnations should be lightly fumigated about once a fortnight as a precaution against aphis.

CANNA.—The old roots of Cannas may be shaken free of the old soil and repotted. Use rich compost and pot firmly. Choice varieties may, if necessary, be increased by dividing the roots and potting each portion singly in small pots. For plants for ordinary decorative purposes pots 6 inches or 7 inches in diameter are large enough for a flowering size.

COLEUS THYRSOIDEUS.—Plants of Coleus thyrsoideus have finished flowering, and may be cut back and placed in a moist, warm house to produce cuttings. A few of the best plants may be shaken out and repotted into pots one size larger than the old ones. Such plants will make specimens suitable for grouping in a large conservatory. A few cuttings struck in May or June will provide useful plants for flowering in small pots. This Coleus may also be raised from seed sown at the present time.

BOUVARDIA.—It is time to attend to the propagation of this useful plant. The easiest method is to shake out the roots, cut them into small portions, and lay them in pans of fine sand. Well water the soil and place the pans in a warm house.

THE FLOWER GARDEN.

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

EDGINGS OF PATHS.—Now is the proper time to lay grass verges, to straighten parts which have got out of line and form those which are dead. Where the path to be relaid is narrow, as it better to bring forward a little of the grass and to fill in the portion of the former than to put a narrow path as is the path which is subject to wear. As the advantage from turning the grass forward is that the narrow part bared may be filled in by means of seeds where good turf cannot be had. It detracts considerably from the neat effect of edgings when portions of the lawn near them get out of the general level, either too high or too low. In the former case, the turf should be slit with a spade cross-wise to the walk and then beaten and the edge straightened. In the latter, it must be turned back and enough soil introduced to bring it up to the level.

LARKSPURS.—Stock-flowered and Emperor strains of Larkspurs are the two best suited for garden decoration. The former requires so much attention in staking and tying that I have not grown it since 1914. The other type requires no stakes. The present is a suitable time to sow the seed of both kinds. My plan has been to sow thinly in cutting boxes, germinate the seeds in a cool structure, and transplant the seedlings from the boxes to the beds when they attain a height not exceeding 1 inch. Plants older and stronger than that are apt to die in numbers, while small plants seldom go off, and in the end the smaller plants make quite as large and as fine material as those produced with the expenditure of greater labour.

VIOLAS.—Viola plants should be possessed long ago with an abundance of roots and, particularly if the space they occupy is required for other plants or crops, they may be transferred to the quarters they are to fill through out the season as soon as the weather and soil are suitable for their removal. Varieties of V. gracilis may be planted out at the same time, and any other hardy plant, such as Nepeta Mussinii, Anthemis tinctoria, and Double Camomile, which have been rooted along with them.

DAFFODILS.—Before Daffodils make further progress any weeds that have appeared since the beds were attended to in autumn should be removed and the interspace Dutch hoed. A slight dressing of superphosphate scattered evenly over bare spaces before the hoe is used will be of great advantage, not only to the flowers, but also to the flower stalks, causing them to lengthen, and to the leaves, which it broadens and deepens in colour, with the result that a better quality of bulb is produced for next year's flowering. Narcissi of the Poeticus section and a few other late kinds should be left in the meantime if the blades have not yet broken through the ground.

EDITORIAL NOTICE.

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

Special Notice to Correspondents. — *The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.*

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

Letters for Publication, *as well as specimens of plants for naming, should be addressed to the* **EDITORS, 41, Wellington Street, Covent Garden, London.** *Communications should be* WRITTEN ON ONE SIDE ONLY OF THE PAPER, *sent as early in the week as possible, and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.*

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

APPOINTMENTS FOR MARCH.

TUESDAY, MARCH 5—
Scottish Hort. Asso. meet.
THURSDAY, MARCH 7—
Manchester Orchid Soc. meet
TUESDAY MARCH 12—
Roy. Hort. Soc.'s Comms. meet.
THURSDAY, MARCH 21—
Manchester and N. of England Orchid. Soc. meet
TUESDAY, MARCH 26—
Roy. Hort. Soc.'s Comms. meet.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 40.8

ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, *Thursday*, February 28, 10 a.m.: Bar. 29.6, temp. 42.5°. Weather—Bright sunshine.

Commercial Fruit-Growing.

For many years there has been a certain measure of antagonism, or at least of disunion, not only between individual fruit-growers, but between the different fruit-growing districts. As a result, commercial fruit growing has been disregarded as an industry, and the general public have formed the idea that the British fruit-grower is backward as compared with his Colonial and American confrère.

In the decade prior to the war commercial fruit-growing in the British Isles made progress by leaps and bounds. Many new plantations were laid out, worthless varieties were top-grafted, up-to-date spraying became a matter of usual routine, and growers concentrated on producing a large bulk of produce of only a few selected varieties.

With this new era local prejudice was gradually being cast aside, but the advent of the war stopped further progress for the moment.

During the first two years of the war fruit-growers found themselves in a very difficult position, their labour went into the Army and munition works, their produce was looked upon as a luxury and not a necessity, and the increased cost of production caused profits to diminish.

Times have changed, however: fruit may still be regarded by some as a luxury, but everybody agrees that when manufactured into jam it is a valuable food. Enormous quantities of jam have been used by the Army and at home, and with the supplies of butter and margarine becoming short, jam must make good the deficit.

The idea was recently conceived that the ancient Guilds in the City of London should play a leading part in the policy of reconstruction after the war. With this in view the Worshipful Company of Fruiterers, acting in conjunction with the National Fruit Growers' Federation, convened a conference, which was held in the Council Chamber at the Guildhall on Friday, February 22. At this conference members of the Fruiterers' Company and representatives of the various Fruit Growers' Associations in the country discussed and passed a number of important resolutions with a view to placing their industry on a sound foundation.

A luncheon, given by the Worshipful Company of Fruiterers, took place later at the Mansion House, by kind permission of the Lord Mayor.

The President of the Board of Agriculture, responding to the toast of "Fruit Growing," in a sympathetic speech urged the necessity for each industry in the country to organise itself and to prepare a constructive policy to be put into operation at the termination of the war.

In this connection Mr. Prothero mentioned that a Fruit Section had recently been formed in the Food Production Department of the Board of Agriculture, which, by working in co-operation with an Advisory Committee of Fruit Growers, would be a very valuable asset to forward this movement.

There are very many directions in which commercial fruit growers have leeway to make up. The inauguration of a campaign to induce growers to top-graft their useless varieties of Apples with sound varieties of sterling merit, such as Bramley's Seedling or Newton Wonder, would produce beneficial results in a short while, and will serve as an illustration of one of the lines along which progress is required.

To illustrate the point further, it does not pay commercially to grow Peasgood's Nonesuch, because it crops poorly, and is very subject to canker; Devonshire Quarrenden, because it cankers and scabs badly, Ecklinville Seedling, Potts' Seedling, and Dumelow's Seedling all suffer badly from scab; Yellow Ingestre and Northern Greening are too small for commercial use.

By heading these trees back and top-grafting them with the strong growing varieties previously mentioned, liability to disease is removed, and in four or five years large crops of excellent quality will be obtained. At the same time, the British fruit trade benefits not only by the increase in the bulk of these varieties, but also by the removal from the markets of small and diseased samples.

There are many other ways in which immediate progress can be made, but fruit growers must remember that they have been given a golden opportunity in which to reorganise their industry and make it both active and progressive. If they allow this opportunity to pass British fruit growing will not hold its own after the war. By their co-operation and enterprise the growers themselves, with the help of the Government, can secure for their industry the great position which it deserves.

THE FLOWERING OF THE ALMOND.—The forwardness of the present season is exemplified by an Almond tree growing at Wandsworth, near the Common, about five miles from the centre of London. This tree is now (February 23) in bloom, exactly two months earlier than last year, when the flowers first appeared on April 23. Previous to last year the flowering dates, reckoned backwards, were February 18, March 9, March 2, January 25, February 24, March 11, March 12, April 1, March 23, March 20, February 28, March 7, March 21. It will be seen by this record that the present date of flowering is the earliest but two.

THE LATE W. T. WARE.—Mr. WALTER THOMAS WARE, of Inglescombe, near Bath, who died on December 16, has left a fortune of the value of £137,092, the net personalty being £119,828. The testator bequeathed £250 each to the Gardeners' Benevolent Institution and the Royal Gardeners' Orphan Fund, and legacies to servants and other persons in his employment.

APICULTURE IN BRITISH EAST AFRICA.—The gathering of beeswax in the East Africa Protectorate is almost entirely in the hands of the natives, who obtain the product from wild hives in the country, remarks the *Journal of the Royal Society of Arts*. Very little scientific apiculture is practised, and that only by the European settlers in the highlands. Notwithstanding the present small production of honey and beeswax, the higher altitudes of the Colony are peculiarly well adapted to apiculture. Clover is an abundant crop, and other flowers are plentiful. There are two rainy seasons, no winters, and so far no serious bee diseases have developed. The Government is giving every encouragement to the industry, and the active interest of the settlers is being aroused to the opportunity. During the fiscal year ended March 31, 1915, the total export of beeswax amounted to 1,563 cwt., valued at £10,000. For export, the product is packed in bags containing 5 frasilas (180 lb.). There is no export duty.

SUNFLOWER SEEDS AS FOOD FOR POULTRY.—The seeds of the giant strains of Sunflowers are rich in oil, and are a valuable food for poultry. The only seed available in quantity is the American Giant strain. Seed may be obtained from leading retail seedsmen at a price which should not exceed 3d. per oz., 9d. per 4 oz., or 1s. 3d. per 8 oz. One ounce is sufficient for 8 rods, and 1½ lb. will plant an acre. The Food Controller will be prepared to purchase ripened seed in quantities of ½ cwt. and upwards, at a price to be arranged later. The yield, which depends on the season, should be at the rate of not less than 12 cwt. per acre. It is important that only vacant land be used; this culture is not intended to interfere with the planting of food or forage crops already arranged for.

WAR ITEM. We regret to hear of the death in action of Lieut. J. SALSBURY SMITH, son of Mr. J. SMITH, managing director of the firm of JAMES SMITH AND SONS, nurserymen, of Darley Dale, Matlock. Lieut. SMITH was only nineteen years of age, but was a youth of great promise, especially in scientific pursuits. He had only been at the front six weeks when he was reported missing, and later the news of his death

and burial was sent by the German military authorities.

LOCAL SOCIETIES.—Councillor R. A. THORPE, J.P., presided at the lecture delivered by Mr. W. F. GILES, of Messrs SUTTON AND SONS, Reading, to members of the Watford Horticultural Society on Wednesday evening, February 13, the subject being "Serviceable Vegetables and How to Grow Them." The attendance was good, and the lecturer's remarks were followed with keen interest.

PRIMULA MALACOIDES ALBA PLENA.—A group of this semi-double variety of Primula malacoides (see fig. 41), shown at the R.H.S. meeting on the 12th ult. by Messrs W. AND J. BROWN, was one of the most attractive exhibits in the hall. The flowers, which are produced in profusion, give the effect of being white, but on closer examination some of the petals display faint traces of colour, and there is a little yellow in the eye. The foliage is almost as attractive as the flowers, being of a delicate pale green, of Fern-like form. The plant makes a charming subject for the decoration of the conservatory and greenhouse in winter and spring, and is easy to cultivate. We are indebted for the illustration to Messrs. HURST AND SON, who inform us that they will distribute seed to the trade next autumn.

HOME CORRESPONDENCE.

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

APPLES RIVAL AND BARNACK BEAUTY (see p. 54).—Rival is a free growing variety. The fruits are of handsome appearance, of good flavour, and, for market purposes, of a shape which packs most attractively, especially where the 40 lbs. case is used. Last season bushel boxes of Rival from this district realised 27s. 6d. each in the Dublin market. This variety, in one part of the kitchen garden here, is inclined to canker a little, but the trees are rapidly growing out of the disease, whereas those in another part of the garden and in the orchard are quite free from canker. It is probably a question of soil or drainage, and I find that the best method of dealing with the complaint is to cut the cankered part clean out. I find that subsequent dressing of the wound is not necessary, as it is astonishing how quickly the damaged part heals and new bark forms around a branch when it is left to nature. I have never seen scab on my trees in the garden, but the fruits on the orchard trees were slightly affected by this fungus last season, and this in a year when varieties subject to scab, such as Bismarck and Cox's Orange Pippin, were unusually free from the complaint. With regard to Barnack Beauty, young orchard trees of this variety, seven years planted, are growing strongly, and making regular and shapely heads. The great value of this variety is the late-keeping qualities of the fruits, and as a market variety, in its attractive colour and appearance. The fruits keep well until mid-April, and perhaps later; ours are usually finished at about this date. I find that, like Allington Pippin, the tree bears heavily in alternate seasons, but no doubt this characteristic could be modified by judicious thinning when a heavy crop of fruit has set. The fruit is not of the first quality as regards flavour, but is probably equal in this respect to the majority of Apples on the market in April. The tree is not quite free from canker here, but its slight tendency to this disease is more than counterbalanced by its strength of growth. The fruit, which is bright and well coloured, does not suffer at all from scab.—*T. E. Tomalin, Beesborough, Piltown, Kilkenny.*

IRIS STYLOSA (see p. 30).—With me, Iris stylosa opened its first flowers in November at the foot of a south wall, and the plants have continued in bloom ever since. This Iris is undoubtedly one of the most useful of hardy plants, as the flowers appear when but little else is in bloom out of doors. The blossoms last fresh for a long time in water, provided the stalks are cut at an early stage, as all flowers should be where they are required for indoor decoration.—*E. Molyneux, The Farm, Sherborne Park, Hampshire.*

UNDESIRABLE APPLES (see p. 66).—Owing to the variations of Apples in certain localities many fruit growers will differ from *E. M.* as to "undesirable varieties." Schoolmaster is unequalled quality for cooking to those who appreciate a tart Apple. It combines the acidity of Dumelow's Seedling (Wellington) with a rich flavour, and is at its best condition during January, February and March. Barnack Beauty is a profuse cropper, of beautiful appearance and fairly good in flavour; the fruits are at their best in April. Bedfordshire Foundling retains its briskness long after Bloodnam Pippin has become insipid. Hawthornden has many conpects in November, but as a certain cropper for the cottager's garden; whilst Nanny is of delightful aroma when well coloured in October. Gravenstein has the remarkable property of firm flesh in the beginning of October, and pleasant mellowness at the beginning of February.—*Will Taylor, Hampton, Middlesex.*

HIPPEASTRUM ACRAMANNII (see p. 63).—I have a bulb of "Amaryllis" Acramannii pulcherrima. It was sent me by my father, who brought the plant from The Lawn, Swindon, Wiltshire, into Hampshire, in about 1872. No doubt the original bulbs were procured from Bristol or Bath, as my father was often an exhibitor at the West of England shows in those days. I have had my bulb twelve years, probably more, and as yet it has produced no offset. It flowers every season [illegible] the flower spike is about 3 inches [illegible].—*H. Stockland, Abbeyan Hall Gardens, Mr. Derbyshire.*

MEALY BUG ON HIPPEASTRUMS.—In the article on Hippeastrums, p. 65, the writer refers to trouble caused by mealy bugs if they obtain a lodgment on the plants. Some years ago the late Herr Max Leichtlin, of Baden Baden, wrote at this subject in a contemporary journal as follows: "There is a very simple way of getting the plants at least all Amaryllideae perfectly clean by planting the bulbs for a year or two deeper than usual, that is to say, so deep that the two joints from which the green shoots spring are just level with the soil. The creature dislikes moisture, and soon lodges between the leaves; by searching two or three times carefully it can be exterminated. We grow Amaryllids, for convenience' sake, above the soil, but it is unnatural and likely to promote the existence of insects." I have never had an opportunity to carry out this treatment, but the experiment seems to me well worth trying.—*W. T.*

PE-TSAI.—*J. E.*'s remarks on p. 38 are very interesting. I have grown Pe-Tsai for many years, and my experience agrees with that of writers and friends in that it invariably bolts if sown so early, yet he records getting very fair heads from May sowing. In China it is apparently available all through the winter. Where is *J. E.*'s garden? Has he really got Pe-Tsai or is it Pak-Choi or some other kind?

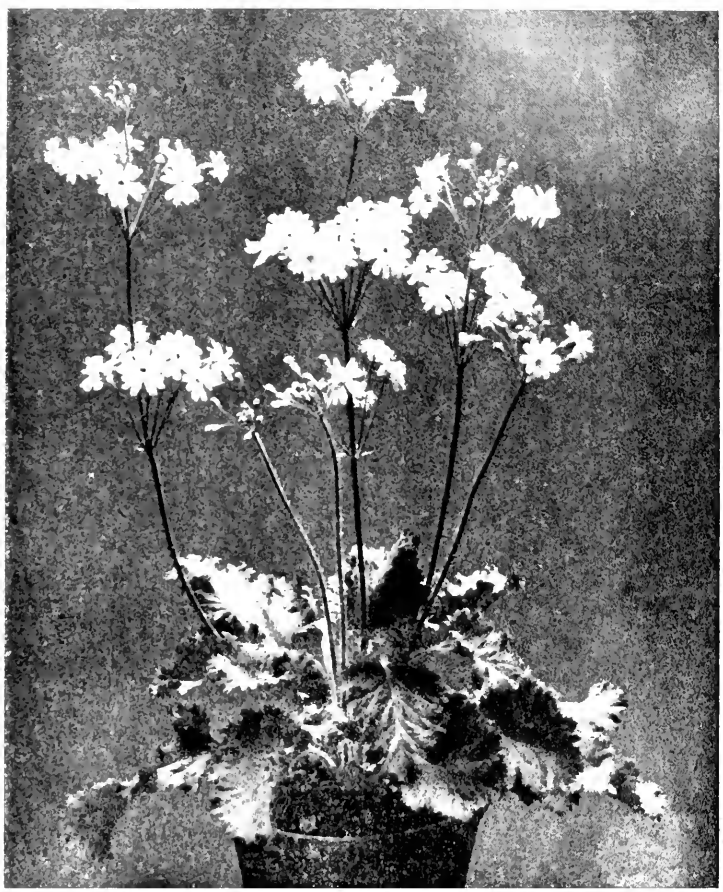


FIG. 41.—PRIMULA MALACOIDES ALBA PLENA.

The allusion to a Cabbagy flavour is against its being Pe Tsai. Cooked like English Cabbage it would find no more favour with me than that article. Pe Tsai forms a good salad eaten raw. *H. E. D.*

THE EFFECT OF ONE PLANT ON ANOTHER.—On taking charge of these gardens some nine years ago, I found an orchard of young standard fruit trees which had been planted on about ¾ acre of a field in the west of the gardens. The grass had been allowed to grow close up to the trees, and was not even mown, with the result that all but three of the trees had lost their heads entirely. On examining them I found that they had been cutted low down near the ground, and that the stems were still green, although their tops were dead. I had the grass cleared away for a distance of 6 feet, and gave the roots of each tree a dressing of basic slag and one barrow load of farmyard manure in November. The next year the stems sprouted at from 2 to 3 feet from the ground, the old tops were cut down to just above the new growths, and the trees treated as maidens and trained into shape. The trees have received the same treatment each autumn since, and the newly formed heads are now 9 to 10 feet through, clean and very healthy. Last season each tree had a crop of from two to three bushels of first-class fruit. The three trees which had not lost their heads were lifted and planted in a row by themselves, and treated similarly to the others, with the same good results. The varieties include King of the Pippins, Bismarck, Blenheim Pippin, Dr. Harvey, Ribston Pippin, Warner's King, Cox's Orange Pippin, Lord Derby, Gascoyne's Scarlet, Bramley's Seedling, and Lane's Prince Albert. After the first season the whole of the grass was trenched and the ground cropped with vegetables, and this treatment is still followed, with the result that we get first class fruits and vegetables. Another orchard of the same size in the same field of established trees, some 50 or 60 years old, had been neglected, and the grass allowed to grow. These trees were covered with lichen and growth was stunted. They gave a plentiful crop of worthless fruit. The whole orchard was cleared of grass, the latter burnt and the ashes spread over and dug in the soil. The roots afterwards received a dressing of basic slag, and the soil was hoed and kept clean during the following season. The trees have regained their vigour in leaf and growth, and the fruit now is all that could be desired. I was told by an old hand on the place that this orchard, under the care of a former gardener, had produced good fruit when annually dug and kept clean, but since the grass was allowed to grow the trees had fallen back year by year into the state that I found them. Is not all this conclusive proof of the poisonous effect of the grass to the roots of fruit trees? This should help to remove any doubt that the cause of degeneration in such fruit trees is toxic and not physical. *C. Capp, Old Abbey Gardens, Lowestoft, Suffolk.*

"SPECIALLY USEFUL ROSES."—I always read *White Rose's* notes with pleasure, and generally with instruction, but his remarks under the above heading on p. 64, are open, however, to an objection which I have made before in your columns. It is quite useless to tell us which are the twelve best Roses without telling us under what conditions of soil, aspect and situation the decision has been arrived at. In naming the twelve best Roses *White Rose* says "the first half-dozen will require little consideration," and proceeds to name six, among them Madame Ravary and Madame Leon Pain. I have grown the former both in my Kent and in my Hampshire gardens ever since it was introduced, and I have never had a single bloom on it worth looking at, nor will it grow with me. I think it has now dwindled away in Kent to a couple of weedy specimens. Madame Leon Pain has never been a success with me. Of the second half dozen, perhaps I do not know enough of the variety Ophelia to say much; Gruss an Teplitz grows fairly well, but produces paltry blooms; Papa Gontier produces some good flowers, but gives out after a couple of years. Now I am not saying for a moment that these are not capital Roses in many gardens, but for me they are no use at all. The soil of my Kent garden is a strong, holding loam, partly over clay, partly over sandrock, and it is well drained, as the ground slopes sharply to the south; we are about 400 feet above sea level. My Hampshire garden had a like soil over a thin bed of clay with gravel beneath, but was only about 40-50 feet above sea level. Now the four best Roses I have ever grown (I am not dogmatising, only giving my personal experience) are Antoine Rivoire, Caroline Testout, Hugh Dickson and Lady Hillingdon, and far and away the best of the four is the first-named Antoine Rivoire. The plant grows well, is in flower all the season, the blooms are always of good shape, and have thick, shell like petals that are unharmed by sun or rain. My old friend Mr. Edward Mawley used to declare to give the best twelve Roses for any garden except his own. My experience, after forty years, is, that it is impossible to name the best twelve or twenty-five Roses for any garden out of one's own district. *B. P. S.*

FIG. 42.—THE STORING OF APPLES. THE INTERIOR OF THE FRUIT ROOM AT ALDENHAM IN FEBRUARY.

NOTES FROM AMERICA.

THE CUT-FLOWER INDUSTRY.

WHILE the war has naturally made some difference in the volume of sales of pot plants and cut flowers in the United States, the reports on Christmas business go to show that it was very large, and in some sections broke all records. To counteract in some measure the outbursts against the culture of flowers in times of war, the Society of American Florists has inaugurated a publicity campaign, and will spend $50,000 this year, chiefly in full-page advertisements in magazines of the largest circulation, advocating the buying of flowers.

We are having a very severe winter, the ground having been frostbound since November 22. The opening week of the New Year broke all records for intensity of cold, the maximum shade temperature in Boston not rising over zero for two or three successive days. To make matters worse for everyone we were suffering from an acute shortage of fuel, and the intense cold did great damage, and caused much suffering. Many commercial and private ranges of greenhouses are closed wholly or in part, owing to an inability to secure coal. Wood is being largely used as the substitute, and while coal prices are held down by the Government, the wood has doubled in value.

Efforts to induce the fuel administrators to refuse coal to florists and others owning greenhouses on the ground that they are non-essential and luxuries, have been unsuccessful so far, and we trust will remain so. Many greenhouses are being devoted to vegetables where formerly flowers were grown, and their number will increase if the war continues.

The various national societies continue their activities in a slightly modified manner, and all have had good exhibitions, with the exception of the Massachusetts Horticultural Society, which lately voted to eliminate money prizes from its 1918 schedule; all other societies are proceeding as in former years. Profits on exhibitions, where admission charges are made, are being mainly devoted to the Red Cross.

Food production holds the centre of the stage here as in Great Britain. Last year saw a tremendous boom in small gardens, or "war gardens," as they are termed here. In spite of late beginnings, unfavourable weather, and some other discouragements, an estimated yield of $350,000,000 worth of vegetables was produced in these new gardens in 1917, and we hope to double these figures during the present year. One great result of this war will be that we shall have far more tillers of the soil than ever before, and horticulture will, as a result, receive a great stimulus. *W. N. Craig, Brookline, Mass., U.S.A.*

THE STORING OF APPLES.

I was much interested to read the note by *Puzzled* in your issue of Jan. 12, p. 19. The opinions of Mr. Beckett and Mr. James Hudson are certainly entitled to the highest respect, but *Puzzled* will be quite safe in following the advice given by Mr. Beckett on p. 8. It may interest some of your readers to know that when picking the Apples here we take clean flour or sugar barrels, each holding about two and a-half bushels, into the orchard and place the Apples in them as they are picked. No lining of any sort is used in the barrels, but each Apple is inspected to see that it is perfectly sound, and care is taken not to bruise it. When the barrel is full it is placed in a moist cellar with a soil floor, where the temperature does not fall below 35°, and the Apples keep perfectly, retaining their flavour and firmness. Having tried both methods extensively, that of laying them out singly and piling the fruits thickly together, I have no hesitation in saying I consider the latter method much the better. *Arthur E. Thatcher, Mount Desert Nurseries, Bar Harbor, Maine, U.S.A.*

SOCIETIES.

ROYAL HORTICULTURAL.

FEBRUARY 26.—There was only a small exhibition on the occasion of the fortnightly meeting in the Drill Hall, Buckingham Gate, on Tuesday last. The Narcissus Committee held its first meeting for the year, and the largest and most important exhibit was a group of Tulips, for which the Committee awarded a Silver-gilt Flora Medal.

Orchids again formed an attractive feature of the exhibition, and five novelties received awards from the Orchid Committee.

Several novelties were submitted to the Floral Committee, and Awards of Merit were recommended for two new Saxifragas. Hardy flowers and Alpines were contributed by a number of growers, but the displays were not comparable to the exhibits of spring flowers which were formerly made. Saxifragas formed a feature of most of these collections and specially good plants were staged by Messrs. R. TUCKER AND SONS, whose group contained Saxifraga Obristii (white), S. macedonica, S. Griesbachii, S. oppositifolia Latina, S. Burseriana minor, and the beautiful yellow Faldonside. T. TEMPLE WEST, Esq., Gatton Point, Redhill, showed a somewhat similar exhibit, the two best Saxifragas of which were S. Irvingii and S. Burseriana crenata, the varietal name being derived from the irregular notchings in the petals. Of even more outstanding merit than the Saxifragas, however, were the plants of Lycopodium clavatum and L. dendroideum, for each of which a Cultural Commendation was awarded. Mr. G. REUTHE's exhibit of sheets and Alpines included the delightful, blue-flowered Crocus Aucheri, and a magnificent specimen of Shortia uniflora grandiflora. Messrs. H. J. CHAPMAN, Ltd., showed a number of Daffodils, hybrid Freesias and Irises of the reticulata section. The Freesias included a new variety named Opal, delicately shaded with rosy lavender. The Committee expressed a wish to see this variety on a future occasion. P. L. MOND, Esq., Sevenoaks (gr. Mr. C. Hall), showed two large groups of flowering plants, one entirely composed of Primula malacoides, the other of Schizanthuses with a row of Epacrises along the front. Messrs. ALLWOOD, Bros. again contributed some fine Carnations of the perpetual flowering type, and Messrs. H. B. MAY AND SONS' group of beautiful Ferns, interspersed with flowering plants, was well worthy of notice.

The Fruit and Vegetable Committee found nothing for their consideration.

At the three o'clock meeting of the Fellows, Mr. F. CHITTENDEN delivered an address on "The Relative Food Values of Garden Crops."

Floral Committee.

Present: Messrs. H. B. May (Chairman), W. J. Bean, R. C. Notcutt, S. Morris, G. Reuthe, H. Cowley, E. A. Bowles, J. Green, J. T. Bennett-Poë, J. Heal, W. P. Thomson, J. F. McLeod, A. G. Jackman, J. Hudson, T. W. Barr, T. Stevenson, C. R. Fielder, R. C. Reginald Neville, A. Turner, J. W. Moorman, C. Dixon, C. E. Shea, C. E. Pearson, E. H. Jenkins, W. B. Cranfield, and W. A. Bilney.

AWARDS OF MERIT.

Saxifraga kewensis rosea. — This dwarf Alpine Saxifrage belongs to the red-stemmed section, the spikes arising from a dense tussock of silvery-grey foliage. The flower-stems are about 2½ inches long, and bear small, pale pink, bell-shaped blossoms about half an inch wide across the mouth. The stems are arching, which gives a marked character to the variety. Shown by Mr. G. REUTHE.

Saxifraga Burseriana sulphurea. This is a hybrid between the rich yellow Faldonside variety and S. Burseriana. The flowers are pale sulphur yellow, about the same size as those of S. Burseriana major, but with the circular outline of Faldonside. The plant is very free in flowering, a specimen in a large 60-sized pot bearing 18 well-developed blooms. Raised by Mr. G. H. SIMPSON HAYWARD, Incomb Manor, Stow-on-the-Wold, and exhibited by Messrs. R. TUCKER AND SONS.

Orchid Committee.

Present: Sir Jeremiah Colman, Bart. (in the chair), Sir Harry J. Veitch, Messrs. Jas. O'Brien (hon. secretary), William Bolton, R. Brooman-White, C. J. Lucas, Walter Cobb, W. H. White, Frederick J. Hanbury, J. E. Shill, J. Charlesworth, E. R. Ashton, T. Armstrong, Fred. Sander, Panl's Ralli, J. Wilson Potter and B. A. Rolfe.

AWARDS.

FIRST-CLASS CERTIFICATES.

Laelia Cattleya Schroderae (*L.-C. Bella alba* × *C. Maggie Raphael alba*), shown by Mr. J. E. SHILL, The Dell Gardens, Englefield Green.—A distinct hybrid of perfect shape; the broad sepals and petals are clear white and the well-rounded lip violet-crimson with a narrow silver-white margin and yellow lines and disc.

Odontoglossum "St. James' amabile" × "Amethyst", from Messrs. CHARLESWORTH AND CO., Haywards Heath.—A noble Odontoglossum, the fine plant bearing a strong spike of large, perfectly shaped flowers. The sepals and petals are violet-mauve with broad white margins and tips.

AWARDS OF MERIT.

Laelia Cattleya Beatrice var. Bryndir (*C. Schroderae* × *L.-C. callistoglossa*), from Dr. MORRIS LACROIX, Bryndir, Rochampton (Orchid grower Mrs. Robertson).—A distinct advance on the varieties previously shown. The sepals and petals are broadly rounded, and are of a rich blush-rose. The front of the lip is rich purple and crimson, and the side lobes are yellow.

Laelia Cattleya [illegible] "Ashtonii" (*L.-C. Dominiana* × *C. Mendelii*), from Messrs. J. OSBORN & MCBEAN, Cattleya Nurseries, Anerley. A pure white flower of perfect shape, much like the variety *L.-C. Dominiana alba*, but the plant is dwarfer and the flowers rather larger. A form with a purple stain at the tip of the side lobes.

Sophro-Laelia Cattleya "Hatch Hyatt" (*Sophro-Cattleya Hatch Hyatt* × *L.-C. Hatch Hyatt* × *S. grandiflora*), from Messrs. STUART LOW AND CO., Enfield Nurseries, Sussex. One of the most brilliant of dark scarlet hybrids, the colour being nearest to a dark Sophronitis grandiflora, but with a deeper red shade. The lip has yellow markings at the base.

PRELIMINARY COMMENDATIONS.

Acridovanda Mundyi (*Acridovanda* × *Vanda teres*) (see fig. 43), from Sir JEREMIAH COLMAN, Bart., Gatton Park, Surrey (gr. Mr. Colbert).—A specially interesting hybrid, as being the first cross between these two genera. The flower is fairly intermediate between the parents, *V. teres* showing plainly in the lip with its median isthmus and other characters. The sepals and petals are silver-white with a light rose shade. There were three plants, each about 6 inches in height and four years old.

Odontioda Juliet (*Oda. Bradshawiae* × *Odm. prometaneum*), from Messrs. CHARLESWORTH AND CO. The flowers are of fine form, reddish-mauve in colour, with slight rose markings.

Odontioda Armstrongii Orchidhurst variety (*Oda. Englsteadae* × *Odm. Armstrongiae*), from Messrs. ARMSTRONG AND BROWN, Tunbridge Wells.—The sepals and petals are broad and overlapping, deep rosy-mauve in colour, with a few white markings. The broad lip is white in front with rose spotting, and there is a large mauve blotch in front of the yellow crest.

GROUPS.

Messrs. ARMSTRONG AND BROWN were awarded a Silver Flora Medal for a varied group containing many new and rare [illegible]. A piece of Sophro-Cattleya Atreus (*Sophro-Cattleya* × *C. Lawrenceana*) had the [illegible] shaped flowers, and is the best of that cross yet, as it does not show the rose tints of [illegible]. The group included a plant of *Cym.* (from Beryl (Lowianum × Pauwelsii) with [illegible] of flowers which have a chestnut-red [illegible] and *Cypripedium Mysem* (Mr. W. Myers' Fairieanum), with intensely dark [illegible] on the white ground of its dorsal sepal.

Messrs. CHARLESWORTH AND CO. were awarded a Silver Flora Medal for a select group of Odontoglossums, Odontiodas, and others. Among the novelties were hybrids was Odontonia Irene (Mrs. Warscewiczii × Odm. hastilabium), with dark purple sepals and petals and well-developed fringed white lip.

Messrs. SANDERS were awarded a Silver Banksian Medal for a group in which the best

FIG. 43.—ACRIDOVANDA MUNDYI. (See Award by the Orchid Committee.)

plants were the new Brasso-Cattleya Calypso, a very large flower of a clear blush-rose tint, the broad petals being arranged wing-like beside the very ample clear rose lip, which is crimped and fringed at the margin; and Cymbidium Elfin, a white flower of fine substance and with attractive purple markings on the front of the lip.

Messrs. HASSALL AND CO., Southgate, were awarded a Silver Banksian Medal for a good group of Cymbidiums, including forms of Sybil, Corona, Alexanderi, and Castor.

Messrs. STUART LOW AND CO. were awarded a Silver Banksian Medal for a group in which the scarlet Sophro-Laelio-Cattleyas and forms of Cattleya Trianae, including the fine varieties Mrs. De B. Crawshay and His Excellency, were prominent.

Sir JEREMIAH COLMAN, Bart., showed Dendrobium Queen of Gatton and pans of Sarcochilus Hartmannii and S. Fitzgeraldii, with eighteen spikes on each specimen.

J. BRIDSON SLATER, Esq., Upper Richmond Road, Putney, exhibited Odontioda Graireana var. May, with cinnabar-red flowers and pink labellums.

Dr. MIGUEL LACROZE staged Odontioda Ethel var. Bryndir (Oda. chelsiensis × Odm. percultum); the centres of the segments are spotted with orange-red.

Narcissus and Tulip Committee.

Present: Messrs. E. A. Bowles (in the chair), J. F. Bennett-Poe, W. B. Cranfield, G. Reuthe, W. Poupart, Geo. Monro, junr., Herbert Chapman, G. W. Leak, and C. H. Curtis (hon. sec.).

The brightness and freshness of early spring was imported to the meeting by exhibits of Daffodils and Tulips shown by Messrs. H. CHAPMAN, Ltd., and Messrs. R. H. BATH, LTD. The former showed numerous good seedling Daffodils derived from King Alfred and a sturdy variety named The Parson, with white perianth and creamy trumpet. Messrs. BATH had a splendid display of Daffodils and Tulips grown in bowls containing fibre; the exhibit was well arranged on a low staging, and bowls of Polyanthus, Narcissi, together with pots of Enchantress, Van der Neer, Yellow Prince and Prince of Austria Tulips were particularly good. (Silver-gilt Flora Medal.)

Mr. J. A. JARDINE, Wandsworth, showed boxes of small seedling Daffodils to illustrate his method of raising these bulbs.

Fruit and Vegetable Committee.

Present: Messrs. W. Poupart (in the chair), A. D. Tuckett, W. Bates, A. Bullock, Owen Thomas, E. Beckett, F. Jordan, Ed. Harris, A. R. Allan, E. A. Bunyard, G. P. Berry, and W. Wilks.

HORTICULTURAL CLUB.

ANNUAL MEETING.

FEBRUARY 26.—The annual meeting of the Horticultural Club took place on Tuesday, the 26th ult., the president, Sir Frank Crisp, Bart., in the chair. The attendance was small, and the hon. secretary, Mr. R. Hooper Pearson, was not able to be present, owing to indisposition. The hon. treasurer, Sir Harry J. Veitch, was also absent, in consequence of having to attend a meeting of the War Horticultural Relief Fund.

The minutes of the preceding annual meeting were read and adopted. The report of the Management Committee for 1917 was then read; we publish the following extracts:—

Towards the end of June, 1917, the Hotel Windsor was commandeered by the Government for official business, including the room which formed the headquarters of the Club. This unexpected event had the effect of disorganising the Club for the rest of the year. As the holiday season followed close upon the loss of the room, little could be done in regard to getting another one until September. From thence onwards enquiries were made at all sorts of places in the neighbourhood of Westminster, with a view to obtaining headquarters similar to those which the Club possessed at the Hotel Windsor. Eventually an agreement was arrived at under which the Horticultural Club agreed to accept the hospitality of the Farmers' Club for a period of six months, or, provided both parties are agreeable, until the termination of the war.

Regarding the personnel of the Club, there have been many losses owing to deaths. Among these may be mentioned Mr. William Marshall, an honorary member and one of the founders of the Club, and Mr. C. T. Druery a very old member of the Committee. Six new members have been elected.

The total number of members is now 193, showing a net loss of seven during the year.

The president, Sir Frank Crisp, read the Statement of Accounts, which had been sent by the treasurer, and proposed the adoption of the Report and Balance sheet, which was carried unanimously.

The members of the Management Committee were re-elected, and Mr. H. Somers Rivers appointed to the vacancy caused by the death of the late Mr. C. T. Druery.

It was decided to send expressions of sympathy in his illness and thanks for his services from the meeting to the secretary, Mr. R. Hooper Pearson, Sir Frank Crisp undertaking himself to send the message.

Mr. Geo. J. Ingram was elected auditor, to act with Mr. R. Pinches, in place of the late Mr. C. T. Druery.

Several members expressed the hope that the Committee would arrange occasional meetings of the Club, and 4 p.m. on the Tuesdays when the R.H.S. fortnightly meetings were being held was suggested as a suitable time and dates. The matter was left to the discretion of the secretary and Committee.

UNITED HORTICULTURAL BENEFIT AND PROVIDENT.

FEBRUARY 11.—The monthly meeting of this Society was held in the R.H.S. Hall on the 11th inst., Mr. Arthur Bedford in the chair.

Two new members were elected. Two members were allowed to withdraw from their deposit accounts sums amounting to £23 2s. 6d.

The sum of £117 15s. 6d. was passed for payment to the nominees of two deceased members. The sick pay for the month was (ordinary) £31 3s., (State section) £28 3s. 4d., and maternity claims) £9.

The annual general meeting will be held at the R.H.S. Hall on the 11th inst.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

JANUARY 17.—*Committee present:* Messrs. R. Ashworth (in the chair), J. Evans, J. Howes, A. J. Keeling, J. Lupton, D. McLeod, J. McNab, W. Shackleton, H. Thorp, and H. Arthur (secretary).

FIRST-CLASS CERTIFICATE.

Cypripedium Garland var. Lady Northbourne (*Hera* × *Lord Wolmer*), a round flower with white dorsal sepal, apple-green at the base, heavily blotched with purple-brown; the petals are 1¾ inch broad, have a green ground, and are blotched and veined with reddish-brown. From the Hon. ROBERT JAMES.

AWARDS OF MERIT.

Cypripedium Lord Wolmer var. Duke of Marlborough (*Euryades* × *Leeanum*), from the Hon. ROBERT JAMES

C. Diadem var Lady Beatty, from S. GRATRIX, Esq.

FEBRUARY 7.—*Committee present:* Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, D. A. Cowan, J. Cypher, A. G. Ellwood, A. Hanner, J. Howes, A. J. Keeling, J. Lupton, D. McLeod, W. Shackleton, H. Thorp, and H. Arthur (secretary).

AWARDS.

FIRST-CLASS CERTIFICATES.

Odontoglossum Promerens var. Gratrixae, O. exultans var. Vulcan, O. Louise var. The Premier, O. Thwaitesiae var Rubellum (*Harryanum* × *Rossii rubescens*), and *Cypripedium Sir Wm. Chance West Point var.* (*Memoria Jerninghamiae* × *Thompsonianum*), from S. GRATRIX, Esq.

Odontoglossum Amillus (*Amethyst* × *illustrissimum*), and *Cypripedium Desdemona var rotundum* (*Alcibiades* × *Mrs. Carey Batten*), from Dr. CRAVEN MOORE.

Cypripedium Saladin (*Chapmanii* × *Olenus*), and *C. Thisbe*, from T. WORSLEY, Esq.

Odontoglossum crispum var. John Hartley (parentage unknown), from JOHN HARTLEY, Esq.

AWARDS OF MERIT.

Odontioda Schröderianum Ashlands var., *Odontoglossum Caroline* (*loochristense* × *Pescatorei*), and *O. Monte Video* (*Thompsonianum* × *Lambeauianum*), from R. ASHWORTH, Esq.

Cypripedium Vivian (*Wilson Potter* × *Euryades*), and *C. Clonis* (*Aeson giganteum* × *exul*), from T. WORSLEY, Esq.

Cypripedium Desdemona var. Conyngham, from Dr. CRAVEN MOORE.

Cattleya Monarch (*Trianae Royal Monarch* × *Empress Frederick*), from S. GRATRIX, Esq.

Brasso-Cattleya Enid (*C. Enid* × *B.-C. Leemanii*), from the EXORS. of the late JOHN LEEMAN, Esq.

AWARDS OF APPRECIATION—1ST CLASS.

Odontoglossum exultans (*excellens* × *crispum*), and *O. Orissa* (*ardentissimum* × *hylandianum*), from Messrs. ARMSTRONG AND BROWN.

GROUPS.

Large Silver Medals were awarded to R. ASHWORTH, Esq., Newchurch (gr. Mr. Davenport), and Messrs. CYPHER AND SONS, Cheltenham, for groups.

CROPS AND STOCK ON THE HOME FARM.

CABBAGE FOR CATTLE.

NEVER has the value of the Cabbage crop been better proved than during the present winter; 19° of frost did the plants no injury. Our cows were fed with them and Mangolds early in November, and have continued ever since to give satisfactory results, both in the quantity and quality of the milk produced. It is surprising what a large quantity of food an acre of Cabbages will supply.

The two forms of Drumhead—Early and Late—are all that are required, although several other sorts render good service. Greater breadths of this food should be grown throughout the country. Cabbages are useful as food for all kinds of stock, pigs, and poultry.

PIGS.

AT the present moment pigs appear to be under a cloud; whether they will survive the difficulty of finding food sufficient to maintain anything approaching their normal quantity during the next two years is a problem. All who have the smallest opportunity to keep them should do so. Prices are remarkably good for all classes, especially breeding stock and stores. Last week I saw a sow and three young ones nine weeks old sold for £28, and a barren sow, on the weight system, for a similar sum. Surely such prices should be encouraging to the pig-keeper!

When, however, we are told that pigs can be kept on grass with the addition of refuse, vegetables, etc., one is inclined to wonder if one's experience is of any value. I keep a number of breeding sows which give, as a rule, ten pigs each litter, two litters yearly, or certainly three in two years. Such stores at twelve weeks old will realise £2 each. Whether in the future this can be repeated is a question. My sows have a yard at night, with plenty of litter for warmth; the more they have the greater is the manure made; by day they run a small paddock, adjoining, where they eat grass, Cabbages, Mangold, Sugar Beet, and small and diseased Potatos, when there are any. In the evening they are given a small quantity of meal and water. Bran is the favourite food, but now quite unobtainable since 4 per cent. more flour is taken from the wheat for bread. The sows flourish well on such a ration. Exercise is a salient point in pig-keeping. With this there is seldom, if ever, cramp or stiff joints, or anything of a more serious character.

As the sows approach parturition they should be isolated, and after that event should be fed on more stimulating food, such as middlings and milk, if possible. When the young pigs are a month old they should be encouraged to drink milk and eat from a separate trough in an adjoining stye, to which they can easily gain access through a small hole in the partition.

No matter how good a mother to her young a sow is, the bulk of them have a strong tendency to gobble up all the food, leaving the young pigs destitute. It is wise to encourage the young pigs to eat meal and milk many times daily, a little at a time; they thrive all the better for any extra attention given them in this respect.

I hope that circumstances will be such that for the pigs in this minor way we shall be in a position to give this much food, because I fail to see how they are to be reared without the aid of some small quantity of meal.

POULTRY.

The poultry keeper is in a dilemma as to the necessary food for chickens and a small amount of Corn or meal for the laying stock. Much may be done to supplement the at one time general food of tail Corn and the various meals by the growing of green crops such as Cabbages, Mangolds, and Turnips. Mangolds, if given too freely raw, cause scour, but not when boiled. By slicing them they are more easily cooked, and with small Potatos, adding quite a small quantity of meal, a good food is provided.

In an ordinary farmyard, after thrashing ricks of any kind, hens find much food among the straw, and, indeed, for a long time afterwards, if the hulls and caving are carefully put into a heap and kept dry. A portion of the refuse food can be used daily, and it will afford the bird exercise in scratching, thus encouraging egg production. Grain of any kind that is fit for human food must not be used for poultry. Where there is considerable scope for ranging, especially in woods, hens do remarkably well, and let us hope that, by chicken-rearing time—March and April—food of some kind will be more plentiful. *E. Molyneux.*

SEED OATS.

THE Food Production Department is prepared to supply farmers direct with not less than 25 quarters of one variety of seed Oats. The varieties offered are (1) Manx White Oats of the "Abundance" type, f.o.r. Liverpool in returnable sacks, at 65s. per quarter of 336 lbs.; (2) Black Tartarian Oats, recleaned, at 65s. per quarter of 336 lbs., in non-returnable bags, f.o.r. Bristol; (3) Black Tartarian Oats, in non-returnable bags, f.o.r. Bristol Channel ports, Liverpool, Manchester, or Fleetwood, at 62s. per quarter of 336 lbs. The Department can also supply farmers with Scottish White Seed Oats of such varieties as "Abundance," "Leader," "Yieldbest," "Victory," "Record," "Banner," and "Waverley," at prices varying from 58s. to 65s., f.o.r. Scotland in hired railway sacks. In the case of these Scottish Oats farmers must be prepared to take a complete parcel, as the Department is not prepared to divide it. Particulars of the parcels available may be obtained on application to the Food Production Department, 72, Victoria Street, S.W. 1. In view of the scarcity of certain varieties of seed Oats in England, and of the increasing difficulties of transport, it is most important that provision should be made for obtaining seed Oats immediately. Samples of Manx Oats and of Irish Black Tartarian Oats may be obtained on application to the Oats Distribution Committee of the Liverpool Corn Trade Association, 9, Brunswick Street, Liverpool. Samples of Irish re-cleaned Black Oats may be obtained on application to the Oats Distribution Committee of the Bristol Channel and West of England Corn Trade Association, 56, Queen Square, Bristol.

LAW NOTE.

DAMAGE BY FALLING TREES.

THE Scottish Court of Appeal has given a verdict in a case concerning the liability for damage caused to a neighbour by the fall of a tree growing in the garden of an adjoining house. Inside the defendant's garden, close by the boundary wall, was a row of Poplars. The trees were of considerable dimensions, being 8 feet in girth near the base. The trees were all pollarded, and overhung the neighbour's buildings. First one of them was uprooted by the wind, and did some damage, but no complaint was made about the danger. There was no evidence that the tree which fell first had been decayed. Three months after the fall of the first tree an exceptional gale broke off the top part of another tree, which fell on the adjoining stable, and did damage estimated at £23. The neighbour sued in the County Court and obtained judgment. An appeal was taken by the tenant to a Divisional Court, but the two judges comprising that Court took opposite sides. The case was then carried to the Court of Appeal, and defendant was held not liable. The legal question was: Was there negligence? The fall of the first tree did not show danger, for it was overturned, not broken across like the second. The state of the wood of the first tree might have been important, but it was not proved. As to the pollarding, and the argument that that made the tree top-heavy, it was admitted that there might have been some inference of that kind if an ordinary wind had brought about the breakage, but it was proved to have been uprooted by quite an exceptional gale.

MARKETS.

COVENT GARDEN, February 27.

We cannot accept any responsibility for the subjoined reports. They are furnished to us regularly every Wednesday by the kindness of several of the principal salesmen, who are responsible for the quotations. It must be remembered that these quotations do not represent the prices on any particular day, but only the general average for the week preceding the date of our report. The prices depend upon the quality of the samples, the way in which they are packed, the supply in the market, and the demand, and they may fluctuate not only from day to day, but occasionally several times in one day.—EDS.

Cut Flowers, &c.: Average Wholesale Prices.

	s. d.	s. d.
Arums—		
— (Richardias), per doz. blms.	3 0– 6 0	
Azalea, white, per doz. bunches ...	3 0– 4 0	
Camellias, white, per doz.	2 6– 3 0	
Carnations, per doz.		
— blooms, best American var.	2 0– 4 0	
Croton leaves, per bun.	1 3– 1 6	
Daffodils (single), per doz. bun.		
Barri	1 0 — 0	
Poeticus	1 0– 1 6	
Golden Spur ...	1 0– 1 6	
— Henry Irving	3 0– 4 0	
— Princeps ...	1 0– 1 6	
Freesia, per doz. bun.	0 4 0	
Heather, white, per doz. bun.	9 0 12 0	
Lilium longiflorum, long	2 6– 6 0	
— Lancifolium album, long	3 0– 4 0	
— rubrum, per doz. long	1 0– 3 0	

	s. d.	s. d.
Lilium, com.		
— — short, per doz. blooms ...	3 6– 4 0	
Lily of the Valley, per doz. bun. ...	30 0 36 0	
Narcissus, Grand Primo per doz. bun. ...	3 0– 4 0	
— ornatus ...	3 0– 4 0	
— Soleil d'Or ...	2 0– 3 0	
Orchids per doz.:—		
— Cypripediums	4 0– 6 0	
Pelargoniums, double scarlet, per doz. bunches	12 0–18 0	
Roses, per doz. blooms		
Richmond	12 0–15 0	
— Sunburst ...	10 0–15 0	
Snowdrops, per doz. bun. ...	2 6– 3 0	
Tulips (single), per doz. bun.		
— White La Reine	30 0– 36 0	
— Mauve ...	12 0–18 0	
— Yellow Prince	28 0–42 0	
— Prince of Austria ...	9 0–12 0	
— Murillo ...	18 0–24 0	
Violets, per doz. bun.	2 0– 3 0	

French Flowers: Average Wholesale Prices.

	s. d.	s. d.
Anemones, double pink, per doz. bun.		
single, mixed ...	9 0 12 0	
Mimosa (Acacia), per basket ...	6 0– 8 0	
Narcissus, per box		
Paper white ...	6 0– 8 0	

	s. d.	s. d.
Narcissus, com.		
Odorosus ...	8 0–10 0	
— Double Yellow ...	6 0– 8 0	
— Soleil d'Or ...	4 0– 6 0	
Ranunculus, scarlet, per doz. bun. ...	15 0–18 0	
Violets, Parma, per bun. ...	5 0– 6 0	
— single ...	3 0– 4 0	

Cut Foliage, &c.: Average Wholesale Prices.

	s. d.	s. d.
Adiantum (Maiden Hair Fern) best, per doz. bun. ...	8 0 10 0	
Asparagus plumosus, long trails, per half dozen ...	2 6– 3 0	
— medium, doz. bunches	1 6	2 0
— Sprengeri ...	10 0	15 0

	s. d.	s. d.
Berberis, per doz. bun. ...	3 0– 6 0	
Carnation foliage, doz. bunches ...	4 0– 5 0	
Cycas leaves, per doz. ...	3 0– 6 0	
Ivy leaves, per doz. bunches ...	2 0– 2 6	
Moss, gross bun. ...	7 0– 8 0	
Smilax, per bun. of 6 trails ...	2 0– 2 6	

REMARKS. Large supplies of cut flowers are arriving this week. Difficulties are the most plentiful, large quantities of the chrysanthemums being sent from Cornwall, Scilly, and Guernsey. Homegrown varieties consist of Emperor, Empress, Golden Spur, Princess, Sir Watkin, and Victoria, these are now at their best. Roses are now becoming more plentiful; Richmond and Sunburst are the best so far offered. Prices remain firm. Tulips are more plentiful and the quality is much better. There are some fine blooms of mauve, pink, and bronze Darwins. Liliums and Richardias are not so plentiful this week, and prices are firmer. Supplies of Lily of the Valley are sufficient for the demand. Violets (Princess of Wales) are reaching the market in excellent condition, and the supplies are equal to requirements. The majority of the Violets sent from the South of France are unsaleable when they arrive here. Other flowers are reaching the market in fair condition, and the supplies are a trifle larger this week. The chief supplies consist of Anemones (de Caen) single mixed, Paper white Narcissus, Acacia, carmine Ranunculus, white and pink Stocks, French Roman Hyacinths, and Parma Violets.

There is very little business in potatos at present, the growers being unable to get their supplies forward.

Vegetables; Average Wholesale Prices.

	s. d.	s. d.
Artichoke, Chinese (Stachy) per lb.	1 3– 1 6	
— Globe, per doz.	12 0–15 0	
— Jerusalem per bushel ...	2 6– 3 0	
Asparagus (English), per bundle ...	10 0–12 0	
— National, per bundle	2 6	
— (Paris Green), per bundle ...	10 0	
Beans:—		
— Broad (new), per pad ...	12 0–14 0	
— French (Channel Islands), per lb.	3 6– 4 6	
Beetroot, per bus.	3 0 —	
Brussels Sprouts, per 1 bus. ...	2 0– 2 6	
Cabbage, per tally	6 0– 8 0	
Carrots, new, per doz. bunches ...	3 0– 4 0	
— per bag ...	4 6– 4 6	
Cauliflowers, per doz.	4 6– 5 0	
Celeriac, per doz. ...	7 0 —	
Celery, per bundle	1 6– 4 6	
Chicory, per lb. ...	0 6– 0 8	
Cucumbers, per doz.	18 0–24 0	
Endive, per doz. ...	4 6– 6 0	
Garlic, per lb. ...	0 8 —	
Greens, per bag ...	2 0– 3 0	

	s. d.	s. d.
Herbs, per doz. bun.	3 0– 4 0	
Horseradish, per bun.	3 0– 5 0	
Leeks, per doz. bun.	3 6– 4 0	
Lettuce, Cabbage, per doz. ...	2 4– 2 6	
Mushrooms, per lb.	2 0– 2 6	
Mustard and Cress, per doz. punnets	1 3– 1 6	
Onions, French, per cwt. ...	34 0–38 0	
— spring, per doz. bun. ...	1 6– 2 0	
— Valencia, per case (4 tiers) ...	35 0–42 0	
— — (5 tiers) ...	35 0–42 0	
Parsnips, per bag...	6 6– 7 0	
Peas, per lb. ...	2 6– 3 0	
Potatos, new, per lb.	1 0– 1 3	
Radishes, per doz. bunches ...	1 6– 2 6	
Rhubarb, forced, per doz.	1 6– 2 2	
Savoys, per tally ...	8 0–10 0	
Seakale per punnet	2 0– 3 0	
Shallots, per doz. lbs.	8 0–10 0	
Spinach, per bus...	4 0– 6 0	
Swedes, per bag ...	1 0– 1 6	
Turnips, per bag ...	2 6– 3 0	
Turnip tops, per bus.	1 6– 2 6	
Watercress, per doz.	0 10– 1 0	

Fruit: Average Wholesale Prices.

	s. d.	s. d.
Almonds, per cwt	170 0 —	
Apples:—		
— cooking, per bus.	10 0– 20 0	
— Russets, French, medium-sized, about 60 to 70 lbs. ...	42 0–48 0	
Dates, per box ...	1 4 —	
Grapes, black Alicante, per lb. ...	6 0– 7 0	
— Almerias, per barrel (35 lbs. ...	4 0– 7 0	

	s. d.	s. d.
Grapes, com.—		
— Gros. Colman, per lb ...	4 6– 8 0	
Lemons, per case...	18 0– 46 0	
Nuts, Barcelonas, per bag ...	150 0 —	
— Cob, per lb ...	1 8 —	
Oranges, per case	60 0–120 0	
— navel, per case	50 0– 56 0	
— tangerines, per 100 ...	18 0 —	
Walnuts, kiln dried, per bag ...	52 0–140 0	

REMARKS. Supplies of English Apples are now shortening, but fairly large supplies of French Russets are available. English Grapes are becoming scarcer, but there are fairly large stocks on hand of Almeria (Spanish) Grapes. Oranges and Lemons remain a limited commodity. Forced vegetables on sale consist of the following: Seakale, Asparagus, Mushrooms, French Dwarf Beans, New Potatos, and Peas. Outdoor vegetables and fruits continue plentiful. *F. H. R., Covent Garden Market, February 27, 1918.*

DEBATING SOCIETIES.

BATH GARDENERS'. A lecture on "How to Grow Onions" was given on February 18 at the Oddfellows' Hall by Mr. W. Taylor, Mr. C. F. Langdon (vice-chairman) presided over a good attendance. Mr. Taylor said although the Onion grown in the ordinary way appeared to be nearly on the surface it was of deep-rooting and gross-feeding vegetable and paid for good tillage. Dealing with the early sowing of seed in boxes, Mr. Taylor said transplanted Onions had the advantage over those left where they were sown, in regard to the attacks of the Onion fly, as the bulb was placed below the surface, and it was very seldom the fly found it.

GARDENING APPOINTMENTS.

MR. FEAKS, Forester to LOCHIEL (Cameron of Lochiel), at Achnacarry, Fort William, in succession to the late Mr. SCOTT, on the Earl of MORAY'S Estates at Darnaway and Castle Stuart.

MR. ROBERT SCOTT the eldest son of Mr. WILLIAM SCOTT, who recently retired, after over 30 years' service, from his post as Head Gardener at Drumpark, Dunragit, Kirkcudbrightshire, who has been for 24 years Superintendent on the Estate of Holmesdale, Pittsfield, Massachusetts, U.S.A., as Superintendent Gardener to Mr. ANDREW CARNEGIE, Shadowbrook, Lenox.

SCHEDULE RECEIVED.

National Carnation and Picotee Society's (Southern Section) Exhibition, to be held in the Drill Hall, Buckingham Gate, Westminster, on Tuesday, July 16, 1918. Hon. secretary, Mr. J. J. Keen, 61, The Avenue, Southampton.

CATALOGUE RECEIVED.

SUTTON & SONS, Reading.—Farm seeds.

"There are few gardeners, and still fewer amateurs, who do not on occasion require immediate information upon various points of practice. But either from an unwillingness to inquire or from not knowing of whom to make the enquiry, they too often fail to obtain the information they are in want of. And let no one be alarmed lest his questions should appear trifling, or those of a person ignorant of that which he ought to know. He is the wisest man who is conscious of his ignorance; for how little do the wisest really know!—except that they know little. If one man is unacquainted with a fact, however common, it is probable that hundreds of others in the same position as himself are equally in want of similar information. To ask a question, then, is to consult the good of others as well as of one's self."—*Gardeners' Chronicle, No. 1, Vol. I., January 7, 1871.*

ACORNS *A. T. H.* The easiest method of treating Acorns is to sow them thinly broadcast in beds about 3 feet wide. The Acorns should be 1 inch or so apart, and be covered with about 2 inches of fine soil trodden firmly after sowing. They should be sown in March as soon as the ground is in suitable condition. Acorns germinate in the first year, and should remain in the seed bed until the end of the second year, when the seedlings should be taken up, the roots trimmed and shortened, and laid in the soil until the following spring, when they can be planted out in nursery rows 6 inches apart and 1 foot from row to row. Mice, rooks, and pigeons will search for and destroy Acorns after they are planted, and this must be guarded against.

ASPARAGUS *B. L. O. B.* Asparagus beds should be well drained. If the soil is wet and of a heavy texture raise the bed about 1 foot above the ground level; in light soils Asparagus beds may be made on the flat. Trench the ground 2½ feet deep and give it a heavy dressing of manure. In the case of heavy land use plenty of light soil, road-scrapings, and other materials that would lighten it. Make the beds 4 feet in width, allowing for three rows of plants to each bed, one in the centre, and those at the sides 10 inches from the edge, placing the plants alternately with one another. Expose the roots as little as possible, spread them out carefully, and set the plants 15 inches apart, covering them with about 3 inches of fine soil. Connover's Colossal and Reading Giant are suitable varieties.

BEDDING PELARGONIUMS. *B.* The blooms should be picked off the Pelargonium plants until the latter are placed in the beds.

BUTTERCUPS ON A LAWN. *C. H.* Ploughing would not kill the weeds, whilst the application of weed killer would render the soil sterile to growth for a long time. Goats would not exterminate the weeds; indeed, the manure from the animals would probably cause the weeds to grow faster. Trenching the ground 16 inches deep and burying the weeds at the bottom spit would get rid of them, and the land would grow a full crop of green food the first year, and afterwards any other crop under good management. The sowing of seeds the first year in such land without adding fine soil in the rows would be a difficult matter.

JERUSALEM ARTICHOKES. *J. H. L.* The Jerusalem Artichoke cannot be depended upon to flower in this country, consequently it is useless to grow for producing seeds as food for poultry. It would be far better to grow the giant Russian Sunflower for poultry food. The tubers of the Jerusalem Artichoke could be used as food for pigs, but certain other crops would be more profitable in this respect. To obtain a heavy crop of the tubers the ground should be well trenched and deeply dug, and heavy manuring, as recommended on p. 90.

MANURE FOR FRUIT TREES. *Young.* Potash, in the form of kainit or chlorides is beneficial to all kinds of fruit when the soil does not contain enough in an available form, and withholding it from a nutritive point of view. Woburn experiments had more effect than the absence of any other manure, but it is improbable that you can obtain potash at the present time. Moreover, dung in nearly all experiments has had a greater effect than potash alone or any mixture of artificial manures. Potash and any stimulating manures containing nitrogen have more immediate effect upon the growth of fruit trees than upon fruiting, but growth is essential to obtain length of branches which will be capable of furnishing sooner or later the greatest quantity of fruit that a tree can bear. Similarly with Strawberries, such manures affect the size of the plants more than the number of fruits, though vigour in plants is essential to size of fruit. A dressing of dung at the present time would be the best application for Strawberries. Potash manures have proved particularly valuable for bush fruits, but there is enough potash in dung. A moderate dressing of dung, say, 15 tons per acre, is quite sufficient for Strawberries, and an extra quantity did no good at Woburn. As dung and potash alone are slow-acting manures, the present is a good time for their application. When kainit can be obtained, 4 cwt. per acre would be a fair dressing. Where dung is not obtainable, a complete dressing of artificials, such as 4 cwt. of superphosphate, 2 cwt of nitrate of soda, and 4 cwt of kainit or 2 cwt of sulphate of potash per acre might prove valuable for all kinds of fruit, applied in April or May. The present times is too early for the application of nitrogenous manures, as they are liable to be washed away before they can be utilised, if applied too early in the season. Such a mixture proved highly beneficial to bush fruits, and particularly to Gooseberries, at Woburn, but a liberal dressing of dung was better still, and at present a complete dressing of artificials is not obtainable, owing to lack of potash. Most soils contain enough iron for fruit, and there is not sufficient evidence of applications of sulphate of iron having had any regularly beneficial effect. Very few experiments have been tried with it. Three pounds per tree of fair size, as far as the spread of the branches, would be a good dressing. Basic slag or other phosphatic manure by itself has failed to show any obvious effect upon fruit trees, and at Woburn its withholding from a complete mixture of artificials seemed to be beneficial, though this may have been accidental.

NAMES OF PLANTS: *J. N. B.* 1, Cupressus pisifera var. squarrosa; 2, Cryptomeria japonica var. elegans; 3, Thuya dolabrata.—*J. O.* 1 and 5, Picea excelsa; 2, Picea Omorika; 3, Pseudotsuga Douglasii; 4, Thuya dolabrata. *W. M. M.* Cypripedium gigas (Harrisianum × Lawrenceanum). This plant has never been recorded under the name you give.—*Dublin.* Daphne Laureola (Spurge Laurel).—*L. S.* Apparently a form of Berberis aristata. It might possibly be B. umbellata, though your description of the colour of the fruits does not agree with that species, as B. umbellata has oblong red fruit, whilst B. aristata and its varieties have long red fruits covered with bluish-white bloom, which would give them a purplish appearance.

SALT. *J. W.* Common salt is sodium chloride, and is often used as a weed-killer, or as a preventive of wire-worms in soil. It is occasionally employed as a top dressing for Asparagus, as it helps to retain moisture in the soil, but it is in no sense a plant food.

SCABBY POTATOS: *Constant Reader.* The grey, silvery patches on some of the tubers are the "silver scurf," caused by the fungus Spondylocladium atrovirens. This is not a serious disease. The rusty-brown markings under the skin of the other diseased tubers are characteristic of the common "blight" of the Potato. Obtain the free illustrated leaflet on Potato spraying from the Food Production Department, 72, Victoria Street, London, S.W. 1.

SEAKALE AND GLOBE ARTICHOKES. *B.* Seakale should be planted in March, and Globe Artichokes in April, in deeply dug and well-prepared ground.

SUGAR BEET. *R. M. P.* See p. 6 in the issue for January 5, 1918.

THE CULTIVATION OF CANTELOUP MELONS: *S. B.* For general purposes the variety should be sown in three batches, from March 15 to April 15. Insert the seeds in shallow pans filled with soil consisting of one half good loam and one-half well-decayed manure and germinate them in a temperature from 65° to 70° F. As soon as the cotyledons are well developed, place the plants in 3-inch pots filled with the same kind of compost, and grow them at the same temperature as advised for the seeds. The provision of light shading, occasional sprayings, and a little ventilation during the sunny hours will be all the attention needed by the young plants. Eight or ten days after the plants are potted a hot bed, 10 to 12 inches thick, should be made out of doors in a well sheltered and sunny situation to accommodate a frame filled with sufficient soil for plunging the pots. Set the plants in the frame as soon as the bed is sufficiently warmed, allowing the necessary space for future growth. From this stage the plants should be kept moist at the roots, shaded during the brightest parts of the day, and allowed a little ventilation daily. Cover the lights at night to maintain an even temperature. When the fourth leaf develops stop the plants at the second leaf and remove the cotyledons close to the stem with a sharp knife. At that stage prepare the final quarters for the plants. The most suitable place is a situation facing south, and sheltered from cold winds. Make a trench 8 to 10 inches deep and 2 feet 6 inches wide, and fill it with horse-straw manure, which should be firmly trodden down and watered if necessary. Place the frames over the manure in the trench and fill them with rich garden soil, mounding it 3 or 4 inches higher in the centre. When brick pits or very deep frames are used the manure bed is made inside the pits or frames, instead of in a trench. When the compost is warm to the hand set the Melon plants in the centre; two are generally sufficient to each light, though some growers set three in a triangle. Keep the lights closed and shaded from 9 a.m. to 3 p.m. till the plants are well established. Afford only a little ventilation at first, increasing the amount gradually; discontinue the shading altogether as growth proceeds and the weather gets warmer. Close the lights late in the afternoon and cover them at night. The plants will require watering on a bright morning within 12 to 15 days after they have been set; they should be kept rather dry within reason till the fruits are the size of a Walnut, but from that time the ground should be kept in a moist condition, consistent both with the growth and the weather. Early in July the frame should be ventilated at night and the protective material dispensed with altogether. During hot weather the lights may be removed, but should be placed in position again when the atmospheric conditions are not so favourable. When the Melons have been 15 to 20 days in their final quarter the two shoots growing from the base of the leaves will have developed into two stems, bearing five to seven leaves each. Direct one of them towards the front and the other towards the back of the frame, and stop them at the fourth or fifth leaf. This operation will cause side shoots to develop, and these will eventually bear the best fruits. Stop the side growths at their second leaf, or the leaf immediately over the fruit. The fruits set freely without artificial pollination provided the details in regard to ventilation have been well attended to. Leave two fruits of even size to each plant; this number may be exceeded when the growth is very luxuriant, and when only medium-sized fruits are required. The fruits should be turned occasionally to ripen them evenly. The removal of crowded shoots or decayed leaves is all the pruning necessary.

VINES: *E. B.* Prune the vines at once. If the pruning is deferred until April the cut surfaces will "bleed," and the flow of sap be difficult to stop. Dressing the wounds with Thompson's Styptic is the best means of preventing "bleeding."

Communications Received—R. W. T. (Thanks for 2s. for R.G.O.F. Box).—J. R. H.—W. R. D.—J. H. C. R. S.—B. of A.—W. A. H. A.—E. A. B.—J. A. P.

THE
Gardeners' Chronicle
No. 1628.—SATURDAY, MARCH 9, 1918.

CONTENTS.

ILLUSTRATIONS.

NOTES FROM KEW.—III.*

ALL things considered, Kew continues to attract and interest the public as much as ever it did. Given a fine Sunday afternoon in February, four or five thousand visitors pay their pennies to enjoy themselves in the grounds and houses (only one museum has been open since the common enemy of the wall). There is not much in February for seekers after floral delights, but Kew is Kew, and as a large proportion of the visitors now-a-days are soldiers, either Colonial or from a distance, they find plenty to interest them. On week days comparatively few people come: three or four hundred the average—and they are mostly men in khaki. Most folk are busy with other matters in the week. Those who knew Kew twenty-five years ago, a quiet village famous for its great national garden, would find it much changed now. It is no longer a village, but an important part of the borough of Richmond, and the present Mayor is a Kew man, as his predecessor was. The market gardens have been displaced by a network of streets and roads, lined with villas. Fleets of motor 'buses and Army lorries roar through the main road from early morning till midnight and after, carrying workers of both sexes. One wonders if the gardens are to be stifled out of Kew by smoke and other poisons which fill the atmosphere and make the healthy cultivation of plants far more difficult than it was when Kew was a little village in the country.

The mild weather during the first half of February brought many plants into active growth. Fortunately, a change set in on the 17th, and we had about ten degrees of frost on four successive nights. Harm is well as prospective good were done, for whilst growth was arrested some plants paid the penalty of coming out too soon. Rhododendron Nobleanum, R. barbatum, R. dahuricum, R. Fargesii, and R. sutchuenense, which were nicely in flower, were spoilt, though some of the less forward buds escaped and developed later. Early flowering Rhododendrons are not an unmixed blessing, except in those parts of the country where frost is less destructive.

Whilst on the subject of Rhododendrons, I may mention R. praecox, a good, showy plant outside in early spring, but of far greater value for forcing. The bushes may be lifted from the open ground in January and placed in a little warmth, where in about six weeks they will be in full bloom. R. strigillosum is flowering outside, and notwithstanding a difference in the leaves, I believe this is merely a Chinese form of R. barbatum. Other Chinese species too

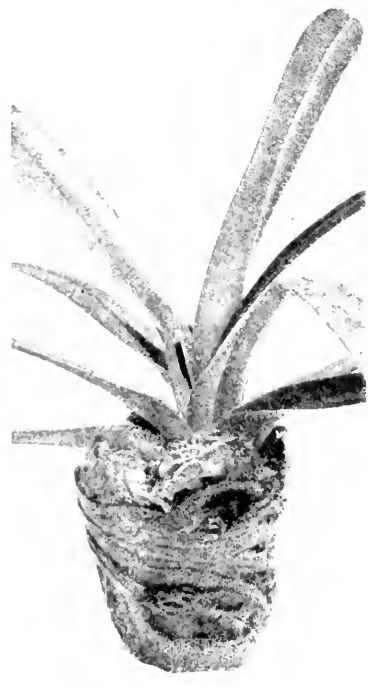


FIG. 21.—PLANT OF CYPRIPEDIUM MOUNTED IN SPONGE WASTE.

called now in flower are R. concinnum, R. Davidsonianum and R. Fargesii, and it is not easy to find a justification for their separate name. They seem slight variants of one species, and may well be called R. Fargesii, which, I suppose, the oldest name. But life is too short to worry over names and the vagaries of the taxonomist too confusing. Over many names are less troublesome than wrong ones. Besides, "Let them name it who can, its beauty remains the same."

Forsythias are in full blow and the Lilac buds have burst. The early Magnolias, stellata and Yulan, are rapidly approaching perfection, and will, if they escape frost, make a brave show at Kew before March is out. What a noble evergreen M. grandiflora is. There are good examples of the plant in the Azalea garden, and the rich red-brown colour of many of the upturned leaves is as effective as flowers. It is singular how many of the leaves have lost, or perhaps never had, any felt covering on their undersides. Its absence does not appear to be due to exposure to wind or to any of many condition. One is reminded of Gregor Sutherlandii, which has some shoots with glabrous leaves, others with decidedly hairy ones. Magnolias and Azaleas will be a great open-air floral feast at Kew in a few weeks.

The only bulbs in the gardens out of doors are Crocuses on the grass mounds, and Daffodils, Snowdrops and Bluebells in the wild gardens and woods. The great displays of Tulips, Hyacinths, etc., in beds have ceased, and the beds are being got ready for the growing of vegetables. The Crocuses make some show, and the Daffodils have begun with pallidus praecox in the enclosure near Cumberland Gate. Here and there patches of the pink Heath Erica carnea are cheering. Gardeners should make more use of this plant for early spring effect. Another good but neglected shrub of the same order is Pieris japonica; the tassels of white bells are like bunches of Lily-of-the-Valley.

Several of the Prunes are in flower notwithstanding the frost, but the great army of spring flowering trees and shrubs will not be at their best until after this notice has appeared. Roses are in danger, for many of them have new shoots 3 inches long, the Ramblers generally being most forward. The Rose Garden near the Pagoda is in fine order. It has been considerably enlarged, and the plants having rooted well. They promise to make a gorgeous display this year. I would like to see a garden of Roses of the tea and hybrid tea varieties in which the plants were allowed to grow *au naturel*, no pruning whatever; also as far as possible, on their own roots. One of the parks might very properly start such a garden. The orthodox treatment for these Roses is severe.

It is a thousand pities that the Almond has not been made more of at Kew. What pictures would have grown up by this time if twenty years or so ago there had been planted as many Almond trees about the gardens as there are, say, Limes and Chestnuts. Another pitiable happening is the "tidying" of the fine collection of Ivies, formerly one of the prides of the arboretum. Ivies are named by and cultivated for their juvenile habit and foliage, and, as with "broken" Tulips, their characters depart when they change. However, there is interest in the variety of these forms that may now be seen at Kew. Possibly I am in error, though I think I have read it in an authoritative work, in saying that when once an Ivy has changed to the adult or true form, it cannot be induced to develop shoots of the juvenile or creeping form. Also that the change is not controllable.

Thanks to the generosity of the late Mr. O. Wrigley, Bury, Kew possesses a good collection of varieties of Clivia miniata. Many of the plants are in flower in the warmer end of the Temperate House. It is

* Previous articles appeared in the issues of January 19 and February 9.

remarkable, seeing how many seedlings of this Clivia have been raised in gardens, that so little variation in colour has been obtained. The flowers are all orange-red with a yellow throat; some are a darker shade than others, but nothing very pronounced. Variety in size and form of petal, and in the number of flowers in the umbel, has been got by breeding. So far as I know, only one hybrid Clivia has been raised, namely, C. cyrtanthiflorum, its parents being C. miniata and C. nobilis, and is it had little to recommend it probably it no longer exists. The genus is related to Cyrtanthus, also to Vallota, and it is not far removed from Nerine, a fact which may interest Mr. Elwes and the Rev. J. Jacob. Clivias are good-natured plants, and are suitable for standing in windows and halls, as they are able to withstand much rough treatment—as much perhaps as Aspidistra. They do well as door plants in the Palm House at Kew, which is about as severe a test as any of a plant's endurance. Other plants that can stand the same treatment are Aspidistra, Curculigo, some of the Crinums, the largest of the Hymenocallis, Pancratium and Eucharis. There are a few other monocotyledonous plants that can tough it, the following list of which may be useful to gardeners who have to furnish large tropical houses. Anthurium, Alpinia, Beschorneria, Bromeliads (any large species that are not too spiny), Caladium, Canna, Curculigo, Curculigo, Cyrtanthus, Dieffenbachia, Dracæna, Hedychium, Heliconia, Maranta, Musa, Pandanus, Spathiphyllum, Sparganium, Strelitzia, and Zingiber. Palms and Cycads are, of course, taken for granted in this category.

Streptocarpus, a hybrid between the tree-like S. Saxorum and the common dwarf, decidedly acaulescent S. Reginæ, is a remarkable plant with flowers of any size and is in flower in the Alpine and succulent Houses now. The species first flowered in 1917—here a photograph of it was reproduced in *Gard. Chron.*, April 2, 1910, p. 217. The cross was made in 1906, so that the hybrid was then eleven years old. In habit and leaf characters it takes after S. Saxorum, the male parent, the leaf-blade being ovate and about 18 inches wide, and the leaves distichous on a decided stem. But the flowers are like those of S. Reginæ except that the colour of the sepals is not rich orange, but a washed or pallid yellow; the petal-sheath is blue. A hybrid of this character may be taken as an indication of what might be done in tropical gardens in the way of crossing big, striking species. Musas offer splendid material. A hybrid Cycad has been raised in Europe, and the glorious Brownea Crawfurdii was raised in a garden in Cork. But no giant hybrid of artificial origin has come from a tropical garden. Calcutta, Ceylon, Singapore, Jamaica, Trinidad and Demerara ought to do work of this kind, not merely for scientific amusement, but with a view to improved races of food fruits and other economic values.

A Temperate House veteran was in all its winter glory in February, namely, the big specimen of Camellia reticulata; the bountiful display of bright crimson Paeony-like flowers are every year a source of wonder and delight to visitors. Mr. Wilson once told me that the common form of this Camellia in China was white-flowered, and that he had sent seeds of it to Messrs. James Veitch and Sons. I suppose they failed to grow, but another attempt might be made to introduce the plant.

There is a good display of flowers in No. 4 Greenhouse—fewer bulbous plants than in former years, but a good-sized group of Hippeastrums and a variety of hard-wooded plants, chief among the latter being a number of bushes of Rhododendron (Azalea) Kaempferi, with salmon-pink flowers. Kew is indebted to Professor Sargent for this most serviceable shrub. He sent seeds of it from the mountains of Japan about 30 years ago. Many plants were raised, and for years they have occupied a large bed in the formal garden behind the Palm House. They are quite hardy, but the flowers expanding early, they are liable to be spoilt by frost. Some of the most showy bushes were marked for special cultivation, and several were forced for the conservatory, where, last February and this, they were very attractive. The plants known as roseiflora, Hexe, Hinodegiri and amœna are, I believe, varieties of this very variable species, and not of R. indicum, as is generally supposed. Certainly R. Kaempferi deserves attention as a first-rate forcing shrub. The purple-leaved Begonia Mrs. Peterson, a variety of Gloire de Lorraine, is another effective plant in No. 4. The Waratah, Telopea speciosissima, is in flower in the Succulent House. The illustration in fig. 47 shows the inflorescence in the early stage before the cluster of flowers in the centre had expanded.

In the rock garden Squills and Chionodoxas blue the ground in places. Primula Winteri is also nicely in flower behind a rock and under the shelter of a pane of glass. The pick of the Saxifragas are the three hybrids Petraschii, Paulinae and Faldonside, and the bright-coloured form of S. oppositifolia known as Wetterhorn.

The photograph (fig. 44) shows a plant of Cypripedium growing in sponge waste, to which I referred in my last notes. *W. Watson.*

FIG. 45. SAXIFRAGA BURSERIANA SULPHUREA.
(R.H.S. Award of Merit, February 26, 1918.)

THE ALPINE GARDEN.

SAXIFRAGA BURSERIANA SULPHUREA.

THE full-sized illustration, fig. 45, depicts the new Saxifraga Burseriana sulphurea raised from Faldonside × S. Burseriana by Mr. G. H. Simpson Hayward, and exhibited by Messrs. R. Tucker and Sons at the meeting of the Royal Horticultural Society on the 26th ult., when the plant received an Award of Merit. As will be seen on reference to the figure, the flowers are large and regular in outline; the colour is pale sulphur-yellow. Judging by the fine specimen exhibited, the new variety grows vigorously and flowers with freedom. It makes a good companion to Faldonside, the delicate colour of the petals contrasting pleasingly with the intense yellow of the older variety.

PRIMULA MARVEN.

PRIMULA MARVEN, the result of a cross between P. marginata and P. venusta, is one of the most delightful of Primulas, though at present a rare one. I last saw the plant in bloom in the gardens of Dr. John MacWatt, at Morelands, Duns. Dr. MacWatt, as is well known, is a special authority on the European and other Primulas, and his collection of these flowers a very extensive one. There it was a pleasure to see Primula Marven, just as I saw it in the raiser's garden at Kaimes Lodge, Edinburgh, some years before. This beautiful Primula is like an Auricula in general appearance, but the flowers are blue-violet. The flower-stems are sturdy, and the leaves possess an elegant golden margin, derived from P. marginata.

RANUNCULUS ALPESTRIS.

ALTHOUGH Ranunculus alpestris is not a difficult plant to cultivate when its wants are supplied, there have been many failures to cultivate it satisfactorily. Where it thrives the snowy flowers, brightened by a yellow eye, are charming, and the spikes are raised above the dainty trilobate, glossy leaves. The roots need plenty of moisture; in a dry, parched soil the plant will look unhealthy. It needs to be planted in a wet soil or in moist shingle or stones, such as a wet moraine, and there it will be compellingly attractive, growing sturdily and healthily. In a soil of medium moisture the plant is fairly satisfactory. *S. Arnott.*

FRUIT REGISTER.

PLUM SUPREME.

PLUM SUPREME, sent out by Messrs. Laxton Bros., is a cross between Denniston's Superb and Victoria, and is a splendid variety in every respect. The tree crops heavily the second year after planting. I know of no Plum superior to this variety for making jam or bottling. As a second early dessert sort it comes in at a most useful time. The colour is similar to Denniston's Superb, and the flavour is good. The fruit does not crack during wet weather, which is a valuable asset. *E. Molyneux.*

ORCHID NOTES AND CLEANINGS.

CYMBIDIUM LYRA.

MR. W. WALKER, Orchid grower to G. Hamilton Smith, Esq., Northside, Leigh Woods, Bristol, sends flowers of a hybrid Cymbidium named Lyra, raised from C. eburneum and C. Gottianum (eburneum × insigne). The second introduction of C. eburneum has resulted in a change of form towards that species, the sepals being broader than in most hybrids of the section and the lip more openly displayed. The sepals and petals are white faintly tinged with rose; the lip is white striped and spotted over its entire surface with dark purple.

CYMBIDIUM SYBIL.

MR. WALKER also sends three flowers of Cymbidium Sybil, a cross between C. eburneum and C. Pauwelsii. The flowers show the great variation obtained from plants raised from seed of the same capsule. One flower is entirely white with a yellow callus on the lip; another blush-white with a band of rose on the front of the lip and small spots on the side lobes; and the third is pale buff colour with faint rose markings on the lip and a green line on the outside of the sepals.

PTEROSTYLIS CURTA.

IT is not often that a report is obtained of successful culture of many of the pretty Australian terrestrial Orchids, but specimens of Pterostylis curta have grown and flowered very freely in the Warren House Gardens, Stanmore, and are now in bloom in the cool Odontoglossum house, one plant bearing over fifty flowers. The bright green leaves are closely arranged near the base of the plant, the roots descending and bearing on each one or two small tubers. The inflorescence is about 6 inches in height, each stem bearing a single erect flower. The three upper segments are closely approached and arched over the column, which is whitish tinged with green. The bottom greenish sepals are connate in the lower half, whilst the free halves are erect and acuminate. The lip is lanceolate, erect and attached to the column at the base by a short strap; it is highly sensitive, and like other members of the same genus, gives ready facilities for fertilisation by insect aid. When the flower expands fully the lip reflexes over the lateral sepals, and quickly springs back when an insect alights on it or if it is artificially irritated. The lip remains closed for some time, but again returns to its position in front. The species is figured in the *Botanical Magazine*, t. 3,086.

MORE SPRING FLOWERS.

AT the risk of repeating myself, I cannot help recommending every gardener to endeavour by hook or crook to get seeds of Iris Rosenbachiana, and not rest content until he has a whole frame full of seedlings. Just at present I have some 40 or 50 plants in bloom, and each one is a little different to its neighbours. The astonishing thing is the ease with which they are grown. It is only necessary to top-dress the soil with old manure and well decayed leaf mould in autumn, to put a light on to the frame to protect the flowers when the broad shoots come through the soil, and to leave it on all through the summer so that the soil may become as hot and dry as possible. Then for six weeks early in the year that frame will always be the chief attraction of the garden.

After trying for years to raise Iris reticulata from seed without success, I have this year had a number in flower. When I say without success, I mean that seedlings of the blue purple type have always given me red purple Kraelages. Now, however, seedlings of these red forms have flowered and given me reds and blues in approximately equal numbers, though the reds slightly predominate. Some of these seedlings seem to my possibly prejudiced eye superior to the well-known type. It remains to be seen which of them, if any, will prove to have a good constitution.

Does any reader know a dwarf white flowered Colchicum from Croatia, which flowers in mid winter or very early in the year? It has two or three leaves of a very dark grey green, lying nearly flat on the ground, and sends up 4 or 5 sturdy little flowers, with an occasional variation bordering on pink. The plant is quite hardy here, though last winter was sufficiently trying, and I was actually able to save a number of seeds of it last summer.

Most of my latest Crocus species are now passing over. The most richly coloured is the Corsican *C. minimus*, of a deep lilac colour, with strongly marked darker feathering on the outer segments. *C. laevis* deserves to be better known, for some of its forms are very beautiful, particularly a white form with blue featherings on the outer segments, and a dark purple base. The milk white form of *C. Imperati* goes on flowering for an astonishing length of time, and the recent frosts seem not to have harmed it. The foliage is characteristic, for it writhes about horizontally on the surface of the ground. The richly coloured *C. banaticus* is only just appearing through the surface.

Tulipa Kaufmanniana (see fig. 46) is very early this year, the first bud opening on February 23. It is not even then the first Tulip species to flower, for it is always beaten in the race by the little *T. biflora*. The latter seems to have numerous forms or closely allied local species. It is curious that a Tulip that comes into flower so early should yet be able to produce six or even eight flowers on its branching stem.

There has also been recently in flower a hybrid for which I am indebted to the kindness of Mr. J. G. Van Tubergen, of Haarlem. It results from a cross between the Mesopotamian Iris sindjarensis and the form of Iris persica known as Heldreichii or stenophylla. It has large flowers of a pale bluish lavender shade, rather paler than the lighter of the two shades of colour in the flowers of Heldreichii. It is a pleasing flower, but not so striking perhaps as the original cross with the typical *I. persica*. Alas, these round seeded Juno Irises are not for my light sand. They all dwindle more or less, and yet sindjarensis, persica, Willmottiana and Tubergeniana are among the best of the Juno Irises.

Why do small Tulip bulbs explore the neighbourhood by means of running stolons, while large bulbs of the same kind are content to flower where they are planted and not send out runners? Some year or two ago, Tulipa Orphanidea was planted in a pocket in my rockery, and when the bulbs were lifted one was overlooked. To-day I dug up four small descendants of that small bulb which had scattered themselves about so that the farthest were a foot apart, and each had sent out a stolon 2 or 3 inches in length, evidently with the intention of spreading yet further. I have watched them carefully. The first year there was one leaf, and therefore one bulb. The next year there was one bulb in the same place and another 2 or 3 inches away. By this year each of those two had given rise to two, for my experience is that a bulb usually forms in the position of the original bulb, as well as another at the end of the stolon. *H. R. Dykes, Charterhouse, Godalming.*

FIG. 46.—TULIPA KAUFMANNIANA: COLOUR OF FLOWERS WHITE WITH YELLOW CENTRE.

NEW OR NOTEWORTHY PLANTS.

RHODODENDRON RIRIEI, HEMS. AND WILS.

THIS Chinese species of Rhododendron was first described in the *Kew Bulletin* for 1910, p. 111, by Dr. Hemsley and Mr. E. H. Wilson. It was discovered in Szechuan and introduced by Wilson whilst collecting on behalf of Messrs. James Veitch and Sons about 1904. I have no knowledge that the plant flowered in this country before 1916, but it may have done so. This year it is blossoming in several places, and an opportunity is thereby afforded of adding to and amending the original description. The type specimen in the Kew Herbarium has only one damaged flower. In the first place the authors describe the flowers as white, a statement copied by Lieut.-Comm. J. G. Millais in his new book *Rhododendrons and the Various Hybrids*, and by myself in *Trees and Shrubs Hardy in the British Isles*. All the flowers I have seen or had accounts of are purple with a black patch at the base of the corolla. There may,

of course, be a white-flowered form in a wild state; if not, Mr. Wilson's memory as to colour must have been at fault. He describes R. Ririei as a bush up to 20 feet high. The leaves are narrowly oval or obovate, 4 to 6 inches long, 1½ to 2 inches wide, dull dark green above, and of a greyish-silvery or metallic hue beneath. I have seen trusses with six or seven flowers, but Wilson states that they carry as many as ten blooms. The corolla is 2½ inches wide, of an elongated bell-shape, five-lobed, purple (of a shade resembling R. campanulatum), with a black patch surrounding the ovary. The stamens are ten, quite smooth and scarcely as long as the corolla; the style is rather longer than the stamens, and free from down or scales; the ovary is covered with a minute felt; calyx with five unequal, subulate teeth 1-16 to 1-8 inch long. Opening at this early period of the year, the blossoms will be liable to damage by frost, and for that reason the species will probably be better suited for gardens in the S.W. counties than for places where the springs are colder. The plant itself appears to be quite hardy. *W. J. Bean.*

NOTICES OF BOOKS.

THE FLORA OF THE NORTHERN TERRITORY OF AUSTRALIA.*

THE record of what was known of the botany of North Australia existed only in a scattered condition in various publications; therefore the present consolidation will be welcome and useful, though wanting in uniformity of plan and composition. The book contains too much of matter that is out of place in a work of this kind, and too little information on some points of practical interest. For example, under each genus the various, often numerous, synonyms are cited, whereas specific synonyms are often omitted. Of course, many genera are unhampered by synonyms, whilst others have from half-a-dozen to five-and-twenty. But a short account of what the book contains will be of more service than a criticism of details. Taking the matter in sequence the map comes first. This is a route map of the "Barclay Expedition," from 12° to 20° S. lat., crossing 151° to 137° E. long., and filled up with the names of the characteristic plants. Among the commonest genera are Brachychiton, Capparis, Eremophila, Banksia, Grevillea, Hakea, and Persoonia, but only one species of Acacia is included, and not one species of Eucalyptus, though both these genera are represented by very numerous species in the territory. No member of Cycadeae, Coniferae, or Palmae appears in this record of characteristic plants. A short preface and introductory note are followed by a list of the new genera and species described in the volume. Spathia is a remarkable new genus of Gramineae. The systematic enumeration occupies nearly 300 pages, and the descriptive part is practically limited to keys to the genera and species. Mr. Maiden contributes separate synopses of the species of Acacia and Eucalyptus, and Mr. Cheel of the rest of the Myotaceae, including an elaborate review of the varieties of Melaleuca Leucadendron, while Mr. Hamilton is responsible for the Cyperaceae. There are also lists of fodder, poisonous and medicinal plants, and a list of popular names and of valuable woods. No analytical summary is given, and there is no sketch of the general vegetation of the country. *W. B. H.*

* *The Flora of the Northern Territory.* By Alfred J. Ewart, D.Sc., Professor of Botany in the University of Melbourne, and Olive B. Davis, M.Sc., with appendices by J. H. Maiden, F.R.S., Director of the Sydney Botanic Gardens, and by A. A. Hamilton and Edwin Cheel. Illustrations by Ethel McLennan, B.Sc., Isabel Cookson, B.Sc., Ellinor Archer, B.Sc., and Margaret Flockton. Sydney: pp. 632, with 27 plates and a map. Published by the authority of the Minister for Home and Territories (McCarron, Bird & Co., Melbourne.) 1917

The Week's Work.

THE KITCHEN GARDEN.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

TOMATOS.—Make a sowing of Tomato seed to obtain strong plants in readiness for planting out-of-doors in May. Grow the seedlings in a light position in a warm glasshouse after they have been potted, to keep them strong and sturdy. Pollinate the flowers as they open, and, as soon as the fruits begin to swell, top-dress the roots with rich loam. Water the plants with weak stimulants, and sprinkle a little concentrated fertiliser on the soil in the pots at short intervals. Remove all side growths as they appear. Continue to pot on young plants for successional fruiting, using a slightly richer compost for the final potting. Admit a little air on all favourable occasions, and let the temperature of the house range from 55° on cold nights to 65° by day.

CELERY.—Guard against crowding seedling Celery, which should be pricked off in boxes as soon as the plants are large enough to handle. Fill the boxes with rich, light soil, and grow the plants in a light position, free from draughts, in a house or frame of moderate warmth. The main sowing may be made at the end of the present month. Sow the seeds thinly, and keep the house close until the seeds have germinated. Afterwards admit air in gradually increasing quantities on all favourable occasions. Suitable varieties for the main sowing are Aldenham Prize Pink, Wright's Giant White, Standard Bearer, and Major Clarke.

FRENCH BEANS.—Frequent applications of liquid manure should be given to plants of French Beans from which pods are being gathered. Plenty of water and atmospheric moisture are necessary to keep the plants in a healthy condition. Top-dress later plants with rich loam mixed with manure from a spent Mushroom-bed. Grow the plants in a light position, and syringe them freely twice a day to prevent attacks of red spider. Continue to sow seeds at short intervals to ensure a constant supply of pods.

RADISHES. Where a constant supply of Radishes is required, seeds may be sown about every ten days. The plants may be raised in cold frames, or even in sheltered positions out-of-doors. Sowings may also be made on warm borders and the plants protected in very cold weather by untrimmed Pea sticks and strawy litter. Webb's Crimson Globe and Wood's Frame are two excellent varieties for early use. For later sowings use a mixed selection.

CARROTS IN FRAMES.—Thin seedling Carrots in frames to about 2 inches apart and water them afterwards to settle the soil about the roots. Increase the amount of ventilation during favourable weather; Carrots grown in an excessively close atmosphere make too much top growth. Make further small sowings, in frames for the present, on gentle hot-beds, to encourage quick growth, of the varieties mentioned in the Calendar of January 12.

THE ORCHID HOUSES.

By J. COLLIER, Gardener to Sir JEREMIAH COLMAN, Bart., Gatton Park, Reigate.

EPIDENDRUM.—Plants of E. vitellinum are developing fresh roots, and any that require repotting should receive attention. This Orchid resents root disturbance. Therefore any plants that are growing in pots sufficiently large to accommodate their new pseudo-bulbs may remain in the same receptacle for another season, provided the compost is not impoverished or sour. Newly potted plants should be watered sparingly until after the young growths are 2 or 3 inches long, when moisture should be applied liberally until the new pseudo-bulbs have completed their growth. This species grows well in a light position in a cool house. Epidendrums of the radicans section, such as E. Burtonii, E. O'Brienianum, and E. Boundii are rooting freely, and plants that have become unsightly and require repotting should be attended to at once. The long, straggling stems should be taken off just below where the new aerial roots are developing. The stems may be potted singly in small pots, or several may be placed together to form specimens. The plants require an intermediate temperature, and during their growing season a plentiful supply of water at the roots. Epiphronites Veitchii is a pretty bigeneric hybrid, raised from Sophronitis grandiflora and Epidendrum radicans. It is very similar in habit to the last-named parent, and continually develops roots from the stem. The treatment of the plant should be similar to that recommended for E. radicans. The plants grow and flower well in pans suspended from the roof-rafters of an intermediate house.

MANAGEMENT OF THE HOUSES.—March is a busy month for the Orchid grower, and, with increased light and sunshine, each division will require more attention in the matters of ventilating, shading, and atmospheric moisture. The temperatures may range a few degrees higher than hitherto, and the atmospheric moisture may be increased. For the present the temperatures should be as follows:—East Indian, or warm house: day, 70°, night 65°; Cattleya and intermediate house: day, 65°, night, 60°; Odontoglossum, or cool house: day, 55° to 60°, night, 55°. Each house will need damping two or three times daily. Every attention should be given the plants to enable them to make strong, healthy growths. The young shoots and leaves are very tender, and will soon be scorched and disfigured if exposed to direct sunlight. Discretion must be exercised in the use of the blinds. It is advisable to be on the safe side by not unduly exposing the plants to the sun's rays; at the same time the blinds should not be allowed to remain down longer than is absolutely necessary. Already the warmth from the sun has, on several occasions, had the effect of raising the temperatures of the houses higher than is necessary for many of the plants. Cold winds often alternate with bright bursts of sunshine, the external temperature being, perhaps, only 40° or even lower; in these conditions it is not advisable to admit fresh air in sufficient quantities to keep down the temperature, but to lower the blinds. When the outside temperature rises to 45° the amount of ventilation may be increased, and shade afforded with discretion. Open the ventilators under the stages, if possible, on the side of the house that is sheltered from the wind. These remarks apply more especially to many of the plants in the East Indian, or warm house, including Phalaenopsis, Angraecum, Bulbophyllum, and the warm-growing Cypripediums, also to the cooler houses containing Odontoglossums, Masdevallias, and cool-growing Cypripediums. For the present the Cattleya and intermediate houses will only require shading for an hour or so during the middle of the day. Plants in these last-named houses that require an extra amount of shade should be placed at one end, where they may be dealt with independently of the others.

THE HARDY FRUIT GARDEN.

By JAS. HUDSON, Head Gardener at Gunnersbury House, Acton, W.

THE MULBERRY.—The Mulberry, Morus nigra, is principally regarded as a decorative tree rather than from the utilitarian standpoint for its fruits. It is a fruit, however, that amply repays for special attention in cultivation. The roots need plenty of moisture, and they should be mulched occasionally with animal manure. The trees are often growing in situations where it is difficult to give them this attention; for example, on lawns. It would, however, be worth while to lift the turf from around such trees, removing some of the exhausted soil, and replacing it with good turfy loam and well rotted farmyard manure broken down finely. If when doing this the soil is found to be dry, let it have a good soaking of water first. Make the surface dressing as firm as possible, and sow in April with grass seeds in preference to re-turfing, although it would be an advantage to

the tree to allow the soil to be clear of growth in a circle from 6 to 8 feet in diameter for a season. In addition to giving this attention to the roots, thin out all weakly shoots and remove the dead growth. In transplanting a Mulberry tree do not mound up the soil but plant it quite on the flat, or even a trifle below the level of the surrounding soil. The present month is the most suitable time to do this work. I have noted the Mulberry for some years past, and am of the opinion that there are different varieties, for the fruits of some trees are much superior to those of others. Colonel Durand, in his book, *The Making of a Frontier*, alludes to the fine varieties of the Mulberry that he met with in Northern India. A well known characteristic of the Mulberry is its prolific cropping, and at such times as the present the berries will be found most useful for preserving.

GRAFTING APPLES AND PEARS. The following remarks apply principally to what may be termed double grafting, or the grafting of established trees, rather than to grafting young stocks as carried out in fruit nurseries. Double grafting is performed by necessity in the case of certain varieties to improve both their fertility and the flavour of the fruits, but this has reference to Pears rather than to Apples, and does not call for remark here. Before re-grafting is decided upon in the case of established trees there should be some justifiable reason for its performance. It is an excellent means of obtaining a good sized fruiting tree of a new variety, or one that is not already in the collection. Never select an unhealthy tree for the purpose, but one that is in full vigour, and, for preference, one that has not been remarkable for its fertility in the past. Judgment is needed as to the amount of grafts that can be inserted on the stock to make it a shapely specimen. I have had experience with horizontally trained wall Pears that were re-grafted; re-grafting such trees offers one of the simplest and best means of adding a new or choice variety to the collection. The best systems of grafting are cleft grafting, rind or crown grafting, and notch grafting.

SUCKER GROWTHS. Take an early opportunity to remove suckers before the trees start into growth. Possibly Plums are the most troublesome trees in this respect. The suckers of Plum trees need to be looked at from wherever they arise, and this is sometimes a troublesome task; I have known suckers from Plums to appear on the opposite side of the path. Sever the suckers close to the roots and cut them clean away; do not casually sever them, for carelessness in this respect might mean a repetition of the evil.

THE FLOWER GARDEN.

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

PELARGONIUM.—Pelargonium plants may be transferred from cutting boxes to pots at any convenient time, though there is no hurry. Strong plants should be placed in 4 or 5 inch pots, arranging some of the roughest of the compost, or coarse leaf mould, at the bottom of each pot for drainage. Much labour is involved in watering Pelargoniums, and many of our old plants which were kept over last autumn are being left in the cutting boxes in which they have been ever since, and they will have only a surfacing of new soil mixed with superphosphate to carry them on. Eight or ten days previous to placing the plants in the beds a sharp knife will be run lengthwise and crosswise between the plants, and to remove them from the boxes one side of each box will be removed and the plants carefully lifted out, planted without delay, and soaked with water. At one time not a few gardeners used to tie the roots of each plant in a handful of moss containing a little soil, and then place them close together in boxes, which also was a means of saving labour in applying water. Cuttings of these plants may be inserted now, but if the heat available be insufficient to favour quick rooting it is to be preferred to delay inserting them for a few weeks longer. When striking quantities of the cuttings we have found them do quite well in a bed of soil in one of the heated pits, and in cutting boxes. But no doubt 3 inch pots are better, water being more easy to give or withhold, and fewer losses resulting. They will succeed in a very high temperature and root all the sooner in considerable warmth, but not a moist heat, else there will be many losses.

MONTBRETIA.—If the soil is in good condition Montbretias may be planted forthwith, putting 2 or 3 of the corms in little clumps and the groups 6 to 9 inches apart, according to the variety. Let them be inserted at least 6 inches deep in soil that has been freely manured. Of the dark varieties Vulcan is the most telling in the mass, and perhaps the best of all for bedding purposes.

RANUNCULUS. The old-fashioned strains of Ranunculus are very quaint, but the most effective are of the section known as "French." The corms should be planted as soon as convenient 2 inches deep, claws downwards, and they need not be more than 2 inches apart, with just space between the rows to permit of hoeing.

HOLLYHOCK.—Nothing is gained by keeping strong seedling Hollyhocks longer out of the ground. The Hollyhock is fairly hardy, and the sooner the plants are established in the ground now the better they will thrive through the summer. Provide a deep rooting medium with a large proportion of rotted dung in it; rotted cow manure for preference.

FRUITS UNDER GLASS.

By W. J. GUISE, Gardener to Mrs DEMPSTER, Keele Hall, Newcastle, Staffordshire.

PREPARING NEW VINE BORDERS.—Where a commencement is to be made in planting young vines during the month of March, the borders should be made in advance of the time proposed for planting, as essential that the degree of fermentation should be subsided before the roots are allowed to extend to them. For an inside border 12 feet wide, with a lean-to of 3 feet wide, it will require 1.2 feet more than is needed for the inside border alone to obtain a depth of 3 feet wide. A width of 4 feet will be ample for the first year, or probably two. Efficient drainage is a very important detail, especially if the ground is in a low situation and naturally damp. On some soils it is not necessary to provide much drainage material, but in other situations in this respect must be needed, and the grower must use his discretion. The bulk of the compost should consist of fibrous loam, chopped roughly into moderate-sized pieces. To the loam add a limited quantity of half-inch bones, charcoal and some manure. Lime in some form, for preference mortar rubble or broken bricks, with the mortar still adhering, is necessary to keep the soil sweet. The proportion of lime used should depend on the nature and texture of the loam. Some growers, when making new vine borders, place the materials in layers probably with good results, but it is better to mix the compost under an open shed where it can be turned several times before it is placed in the vinery. Make the soil firm by treading for in a loose soil vines are apt to make a few long, thong-like roots, instead of short fibrous roots that would permeate the whole border. The turf retaining wall in one year, or at the most two years, should be a mass of fibrous roots then the border may be extended.

APRICOTS. Established Apricot trees are looking remarkably healthy this season, and are a mass of blossom. A cold, damp atmosphere is detrimental to the trees when in flower, therefore the hot water valves should be opened a little at night to dry the air. Close the valves again in the morning at 9 a.m. unless the weather is cold and wet. Drought at the roots will seriously check the growth of the trees, and although it is not good practice to water trees in flower, I would not hesitate to give sufficient tepid water to carry them through the flowering stage and thus prevent a check to root action.

STRAWBERRIES IN PITS. Strawberry plants plunged in a bed of leaves with the crowns near the roof glass should do exceptionally well now, as the days are lengthening and the sun gaining in power. Plenty of air should be given during the day when the sun and air are warm. The heat should only be gentle, for the plants will not bear much without having the effect of unduly drawing the foliage and flower-spikes. When growth has advanced sufficiently the plants should be removed to shelves near the roof-glass in a vinery or Peach house. In these houses, with a maximum amount of sunlight and air, the fruits will set readily. Vacant places in the pots may be replaced by other plants, and thus maintain a succession for forcing.

CORDON PLUMS.—Cordon Plum trees do remarkably well when grown in borders of suitable soil in Peach houses. The earliest possible date to start in flower in these gardens, and, together with the Peach and Nectarine trees, is a beautiful sight. The Plum trees invariably bear an excellent crop, and the fruits finish well. The ventilators are left open a little at night to clear the air to their fullest extent during warm, sunny weather. It is useless to attempt to hurry the growth of Plums; they must develop slowly if the fruit is to be well finished, moreover, the fruit never ripens properly in a close atmosphere, being without flavour or colour.

PLANTS UNDER GLASS.

By E. HARRISS, Gardener to Lady WANTAGE, Lockinge Park, Berkshire.

CYCLAMEN.—Old Cyclamen plants will continue to flower for some time to come if careful attention is given to watering. Draw down the blinds in bright weather or the flowers will lose their bright colours. This remark applies to all plants in flower. Cyclamen plants which have been selected for producing seed should be stood on a shelf in a cool house in full exposure to the sun. Give the roots plenty of stimulants till the seed is ripe. Young plants that were transferred to the seed pan into boxes in January are ready for placing in 5 inch pots. A compost consisting of fibrous loam, leaf mould, finely crushed brick rubble, and coarse sand is suitable. Grow the plants near the roof-glass in a warm, moist house, and spray them twice daily with lukewarm rain water.

PRIMULA ORCONICA. To obtain plants of this useful Primula for flowering in late autumn and winter sow the seeds now in shallow pans filled with a compost consisting of loam, leaf mould and sand. Thoroughly soak the soil with lukewarm water before sowing the seed. Cover the seed lightly with very fine soil, place a sheet of glass on the seed pan, and place them in a moderately warm house. Cover the glass with brown paper until the seedlings appear.

PRIMULA MALACOIDES. Make a sowing of Primula malacoides to obtain plants for autumn flowering; if necessary another sowing may be made later to raise plants for winter flowering. The seeds may be treated as advised for Primula obconica. Grow the plants in cool conditions all through the summer. When the flowers are developing, water the roots with extra care, or many of the flower spikes will damp off.

CINERARIA. The latest batch of Cinerarias should be grown in very cool conditions in order to extend their flowering season as long as possible. The house may be thrown wide open during fine, congenial weather, and the blinds lowered during the hottest part of the day. Fire-heat may be entirely dispensed with except when very severe frost threatens. Cinerarias need careful watering at all times, but a more liberal supply of moisture is necessary now that the pots are filled with roots and the days are longer. Stimulants may be given at every alternate watering. Watch for the leaf maggot, which is very destructive if allowed to spread. Lightly fumigate the house occasionally to destroy aphides.

CHRYSANTHEMUMS. Repot young Chrysanthemum plants as soon as they are sufficiently rooted, or they will receive a check to growth. Use a rich open compost, and pot firmly. Do not expose the plants to cold draughts, which are prevalent at this time of year. Recently potted plants should be kept in a close atmosphere for a few days, and afterwards grown slowly in cooler conditions. Another batch of cuttings may, if necessary, be inserted now. The shoots may be dibbled rather thickly into boxes containing sandy soil. Stand the boxes on a hot bed in a cold pit and keep them close and shaded until roots develop.

EDITORIAL NOTICE.

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

Special Notice to Correspondents. – *The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.*

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

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

APPOINTMENTS FOR MARCH.

TUESDAY, MARCH 12—
Roy. Hort. Soc.'s Comms. meet.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 41°5.

ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, *Thursday*, March 7, 10 a.m.: Bar. 30.1; temp. 44.5°. Weather—Dull.

The Development of British Horticulture.

The suggestion made by the President of the Board of Agriculture at the Fruit Conference referred to in last week's issue on p. 90, that the Board would welcome the formation of an advisory committee of fruit growers, deserves both to be adopted and extended. We should like to see established, if possible at once, a Horticultural Advisory Committee, comprising representatives of all the sections of the industry and craft of horticulture. It is true that the interests of horticulture are diverse, but it is no less true that all the various sections have some common interests. For example, all are interested in securing a simplification of the regulations, schedules, and bye-laws which govern railway transport, and all are concerned in knowing what conditions will obtain with respect to imports in the critical transition period between the beginning of peace and the full ensurement thereof. As an illustration of this community of interests between different sections of the horticultural trade we may mention the subject of agricultural baskets. Hitherto—at all events in recent years—we have relied in large measure on imported baskets, with the result that there is now a serious shortage of certain kinds of basket. To remedy that shortage is by no means easy, for the makers of baskets are busy with what may be presumed to be more remunerative basket work; and inasmuch as they can have no assurance that their services will be wanted after the war, they could hardly be expected, except on patriotic grounds, to turn their energies in large measure to the making of agricultural baskets. Nor is this the only aspect of this important subject which requires attention. The variety of agricultural baskets is almost as great as the variety of weights and measures, and we feel sure that if an advisory horticultural committee were established, one of the subjects to which it would give attention would be that of the simplification, standardisation, and better utilisation of the indispensable packages and baskets used for the distribution of horticultural produce.

Then, again, there is the question of the better utilisation of early districts for the production of vegetable crops which before the war were imported in such vast quantities. To assume that "whatever is is right," may be well enough for poets, but it is not satisfactory to practical men. A return of imports would show, we think, that much of the produce hitherto brought to this country could be raised as well and, ultimately, as cheaply in this country as in Holland, France, Italy, and other countries.

Yet another subject which might well engage the attention of such a committee is that concerned with the popularisation of vegetables as food. It is truly deplorable that at the present time, when food generally is scarce, that the public is apparently unable to make use of the root and green vegetables, of which there are plenty in the country. The reasons for this inability are partly our insufficient marketing arrangements; but mainly the deplorable ignorance of cooking which characterises the British people.

How many households, for instance, know how to make and enjoy vegetable soups? How many systematically use cooked Leeks or Celery as articles of winter diet, and how many know how to cook a Cabbage or Savoy? It is no exaggeration to say that if the ignorance of cooking which characterises so many of us were removed the consumption of vegetables could be increased by 50 per cent., and altogether to the benefit, not only of the producer, but also of the people at large.

Needless to say, there are many other subjects, some of more pressing importance than those already mentioned, that are ripe for consideration by a horticultural advisory committee, and it is therefore to be hoped that as swiftly as may be in the present difficult circumstances such a committee—taking all horticulture for its province—may be set up, with the object of advising and assisting the Board of Agriculture in promoting the interests and providing for the extension of British horticulture.

THE 1918 ONION CROP.—In view of high freights and restrictions in shipping, it is urgently important that the home production of Onions should be increased very largely. For many years past the percentage of Onions grown in this country in relation to the quantity consumed has been small, and therefore no necessity exists to interfere with the ordinary trade channels in order to ensure the grower a market. In order that the grower may be ensured an adequate return for his crops, the Food Controller announces that in the event of its becoming necessary to fix any maximum grower's prices for the British Onion crop of 1918, the prices will not be less than those indicated in the following scale: For delivery on or before November 1, £15 per ton f.o.r. or f.o.b.; for delivery from November 1 to January 1, £16 10s. per ton f.o.r. or f.o.b.; for delivery after January 1, £18 per ton f.o.r. or f.o.b.

NEW ALLOTMENT HOLDERS' UNION.—A meeting of allotment holders was held on Monday, the 4th inst., representing federations from towns in the Rochdale district. An address was given by Mr. CYRIL HARDING (of the National Union Executive, and secretary of London and Southern Allotments Federation), and it was afterwards decided to form a North-Western Branch of the National Union. A provisional council, with Mr. E. NOBLE, 71, South Street, Rochdale, as secretary, was formed to make the necessary arrangements.

NEW ROSES AT BAGATELLE.—We have received from the curator of the Rose gardens at Bagatelle the following announcement: "A trial of new Roses will be conducted in the park of Bagatelle, near Paris, in 1918-1919, as in past years. The plants, as far as possible, should have been raised in pots, and several specimens—five at least—must be sent to the Rosary of Bagatelle before April 30. A notice must be attached as to their origin and parentage, stating, if necessary, any special treatment required for the plants. The varieties sent will be planted in the public Rosary as soon as they reach Bagatelle. They will remain there until the month of October of the second year, so that the jury may be able to study, during two seasons, the flowering and habit of growth. Parcels by rail should be addressed to Roseraie de Bagatelle au Bois de Boulogne, en gare de Neuilly-Porte-Maillot-Paris, and letters to Le Conservateur des Promenades de Paris, 4, Route du Champ d'Entrainement par Neuilly (Seine)."

POULTRY KEEPERS' CLUB.—It is proposed to form a new society, in the form of a federation of all the existing poultry societies and clubs, with the above title. Its object is to form a central organisation to deal with food-supply, freightage, and other questions of interest to all poultry-keepers. The inaugural meeting, which is open to all poultry-keepers, is to be held at the Holborn Restaurant on the 16th inst., at 2 p.m.

GOVERNMENT DISTRIBUTION OF SEED POTATOS.—About 20,000 tons of seed Potatos have been ordered this season through the Food Production Department of the Board of Agriculture.

SHAKESPEARE'S HEROINES AND AMERICAN ROSES.—Catalogues and advertisements of American Roses indicate a happy thought on the part of a Rose grower in the United States in naming his new Roses after Shakespeare's heroines. If the Roses have anything of the immortal beauty of the heroines European raisers will have to look to their laurels. Happy though the thought be, there is a certain incongruity in its practice. What lover of Shakespeare's ladies—and who is not?—would admit that "Rosalind," for example, is a "glorified Ophelia"? The latter Rose, if it is to be true to its namesake, should be fragile and delicate and of pale hue, the former robust and sturdy and of brilliant colour!

THE MARKETING OF SURPLUS PRODUCE FROM ALLOTMENTS.—Schemes for creating marketing organisations in each county have been prepared by the Food Production Department, and are already being put into operation in some counties. The essential part of every scheme is the establishment in each village of a collecting depôt, to which all surpluses, however small, may be brought for packing and despatching to market. The Ministry of Food is giving encouragement to such schemes by undertaking to treat the Potato crop raised by small cultivators in 1918 on an equal footing with the crops of Potatos grown on farms. Provided that the

cultivators in each district will combine so that their produce may be bulked and transport may be saved, the State will purchase all the surplus main crop Potatos grown on holdings, no matter how small. Each small grower will therefore be able, whilst retaining for his own use all he needs, to sell all he does not want. There is no question of commandeering the produce of small cultivators. The Food Controller is merely inviting recognised marketing organisations to sell their surplus produce to him if they wish to do so. The Ministry of Food is prepared in a similar way to purchase surplus fruit grown by small cultivators. To insure that the smallest surplus shall be used it will be necessary for the collecting depôts to be linked up with one another and all of them to be brought under a County Marketing Association.

THE GARDENERS' ROYAL BENEVOLENT INSTITUTION.—In accordance with the resolution adopted at the annual general meeting, the committee of the Gardeners' Royal Benevolent Institution have sent to each unsuccessful candidate at the election the sum of £2. This is in addition to the amount which will be granted in due course from the "Victorian Era Fund."

SUGAR FOR JAM.—The Food Controller, after consultation with the Royal Commission on the Sugar Supply, announces that, so far as can be foreseen, it will be possible to allocate approximately 10,000 tons of sugar during the coming fruit season to enable private fruit-growers to convert their own fruit into jam. The allocation will be made by the Food Control Committees, with the help of the War Agricultural Executive Committees. Each private fruit grower to whom sugar is issued will be required to give an undertaking that the sugar will not be used for any other purpose. Every applicant to whom sugar is allotted will be credited with having 1½ lb. of jam in his possession for every pound of sugar supplied to him, and will be expected to forego the purchase of jam for his household to this extent. No private fruit-grower will be allotted for this purpose more than 10 lb. of sugar in respect of each person who is receiving rations of other commodities as a member of his household, except on an express undertaking that he will, if required, place at the disposal of the local food committee the jam made with sugar allotted to him beyond that amount. The actual amount allotted to each applicant will depend, however, on the supplies available and the applications received. All jam taken over by the local food committees will be paid for according to quality, at prices not exceeding the controlled wholesale prices. In determining the quantity of sugar to be allotted, due regard will be had to the quantity of fruit likely to be available, the number of members of the household, the facilities for preserving possessed by the applicant, and the general circumstances of each case. The Ministry of Food is also taking steps to instal a number of pulping stations in the principal fruit-growing districts in addition to those established last season by the Food Production Department, which have now passed into the hands of the Food Controller. It is estimated that fruit pulped by the process adopted by the Department will keep for at least two years and can be made into jam at any time by the addition of sugar. When fuller details are settled they will be announced in the public press, and it is specially requested that no one will write at present to the Food Controller or any other Government Department asking for any further particulars, as the Controller is already overwhelmed with correspondence. It is expected that the distribution will take place at the beginning of June.

PUBLICATIONS RECEIVED.—***Superfluous Wood in Fruit and other Trees: The Remedy.*** By C. Martin, County Horticultural Instructor, I. of Wight. Price 1s.—***Northern Allotment Holder's Guide.*** January, 1918. (Newcastle-on-Tyne: Northern Allotment Central Association, West Lodge, Walker.)

THE MARKET FRUIT GARDEN.

AFTER its first week, February was generally a dry month, and mild in temperature. Consequently the month was well suited for work on the land, including the digging of orchards. Rain fell on 10 days, amounting to only 0.95 inch. The comparatively high temperature has had a marked stimulus upon vegetation. The leaf-buds of Lilac, Deutzia scabra, Ribes sanguineum, the Gooseberry, and the Black Currant were bursting on the 25th, and the Elder leaf was one-quarter out. Snowdrops and yellow Crocuses were in full bloom on the 20th, while Pear and Plum fruit-buds were swelling on the 25th. These are indications of a somewhat early season, though some records have surpassed them, notably those of 1913 and 1916. Not a single Plum or Gooseberry bud has been found to have been eaten by a bird up to the time of writing, bullfinches being conspicuous by their absence from my orchards.

INDICATIONS OF FRUIT BLOSSOMING.

Pears, Plums, and Apples alike show a general abundance of fruit buds, and, whether we are to have plenty of fruit or not, there is promise of a good show of blossom. Unless a sharp check comes soon, blossoming will be dangerously early. Sugar being lacking for home-made jam, except by the comparatively small proportion of housekeepers who grow fruit, a half-crop of Plums will be better for growers than a whole crop, and probably the same may be said in relation to Gooseberries. It is much to be regretted that sugar for home-made jam should not be provided for housekeepers generally, even if this should involve a reduction of the quantity allowed to the great commercial jam makers. Poor people, even if they do not grow fruit, can often buy it cheaply, and then they can make it at half the price they have to pay in the shops, and much better jam, too. Now that butter is at a prohibitive price and margarine scarce, the poor rely on jam largely as food for their children, and might be helped to make it by being granted permission to buy the necessary sugar, instead of being driven to the shops for it.

THE KEEPING OF APPLES.

Never before have late Apples kept so well in my experience as they have kept this season. In the last week of February fruits of Bramley's Seedling were packed without finding more than about 1 lb. rotten to a bushel of 40 lb., while the proportion of fruit containing a surface rot-spot or two was only 5 lb. out of 45 lb., and such Apples were fit for use with no considerable waste. Newton Wonder and Chelmsford Wonder have kept equally well, and so have D'Arcy Spice, Pippin and Mannington's Pearmain. By the way, the occurrence of 4° of frost in my fruit room on one night in January obviously did no harm to the fruit. Someone, writing in this journal some time ago, expressed the opinion that Apples keep best if gathered before they are ripe; but my Bramleys and Newton Wonders were allowed to hang on the trees last autumn longer than usual. Moreover, I notice that extensive investigations carried out by the Ameri-

FIG. 47.—ILIOPEA SPECIOSISSIMA, THE WARATAH, SHOWING FLOWER HEADS AT AN EARLY STAGE OF DEVELOPMENT.

(See p. 104.)

can Department of Agriculture in reference to the cold storage of Apples led to the conclusion that the picking of either immature or over-mature fruit leads to early decay. Other conclusions are that Apples keep better in a temperature of 32° F. than in a lower temperature; that a delay of even two weeks between picking and cold storing often greatly reduces the keeping properties of Apples; and that carelessness in the handling of the fruit previous to storing is as much responsible for bad keeping as an unsatisfactory condition during storage.

Scaly Blotch and Apple Storage

Experiments carried out by me this season indicate that scaly blotch in Apples neither increases nor extends during storage. A number of extremely slightly blotched Apples were placed in a tray in October, and in the last week of February not the slightest development of the malady had taken place. In another tray 54 badly blotched Apples were mixed with 54 quite clean ones, and there was not a single instance of the disease having spread from the former to the latter. It is useful to know that there is no need of taking out for immediate sale every blotched Apple, when selecting for long keeping, though when space in the fruit-room is not sufficient for all the late keeping fruit that it is desired to store, of course, it is well to clear out the disfigured specimens. Apples have paid very handsomely for keeping this season.

No Prospect for Cob Nuts

It is impossible that even a fair crop of Cob nuts can be produced this year, if the condition of plantations generally is like that of mine. One may walk past twenty or more trees consecutively without seeing a single catkin in fully three-fourths of the space in my principal plantation. So far as they are available near by, the branches from wild nuts containing catkins have been cut off and placed on some of the Cob nut trees; but I think that the female blossoms were forwarder than the development of pollen in the cold catkins.

The portion of my Cob nut crop gathered after October 1 was stored, and kept till the latter part of February, the last lot being sent to market on the 27th. At the time of storing the husks were quite brown, the nuts of the last few pickings having mostly fallen off the trees from over-ripeness. Yet they wasted in weight nearly 25 per cent., all having been weighed when stored and when marketed. If the husks had been green, of course, the waste would have been greater still, though much of the loss was caused by the depredations of rats and mice. If I ever store Cob nuts again, they will be protected by small-mesh wire netting. Notwithstanding the waste, the nuts paid well for keeping; for, whereas the last lot sold before October made only 9d. per lb. gross, those kept till February made 1s. 2d. to 1s. 4d. gross, rail carriage, commission, and toll to come off in both cases.

Brown Rot in Figs

There is reason to fear that my hitherto prosperous little plantation of Figs has been nearly ruined by brown rot. Last month all the half-sized fruit which always grows after picking time, and dies off, instead of being clean and healthy, had assumed the "mummified" appearance characteristic of fruit destroyed by the worst of all fungous diseases of fruit. The Figs have been picked off and burnt; but in very many cases the stems below them were found to have withered, the disease having extended from the fruits to the stems. In such cases cutting back was necessary, and Fig trees are intolerant of much pruning. Another point of ill omen is that the tiny Figs which form at the bases of those which always drop off when they are healthy, and form the crop which ripens, have not developed at the bases of the mummified fruits, while, of course, they could not form on the withered stems that have had to be cut off. One very large tree in an out-of-the-way place, which was forgotten when the rest of the trees were attended to, is now thickly studded with "mummified" Figs, which are covered with mould.

Scab and Brown Rot on Apple Wood.

In pruning varieties of Apples subject to scab on the wood, and particularly Cox's Orange Pippin, it is found that a large proportion of last season's growths must be cut off in consequence of being covered with scab. There is also a good deal of brown rot on spurs of a few varieties, particularly Lord Derby, Domino, and Early Julyan, although the blossom trusses attacked by the disease were cut off in the latter part of May.

Women as Orchard Diggers.

Possibly it has been mentioned on a former occasion that, while women do the work of digging with forks in fruit plantations passably well, they make it very expensive. Before the war, and before wages rose materially, I used to pay 30s. to 40s. per acre to men, the latter price where Black Currants were spreading all over the ground, and impeding the work. The men used to earn 4s. to 5s. 6d. per day, and probably they would require higher piece-work rates now that wages are 25s. a week. But the women, who work an hour less per day than men, and get 15s. if they work all the week, have made the cost £3 10s. per acre.

Rival and Barnack Beauty.

I am obliged to the correspondents who have given testimony of their experience in growing these two Apples, which has been of a satisfactory character. *Southern Grower.*

ON INCREASED FOOD PRODUCTION.

WINTER SPINACH AND SPRING CABBAGES AT ALDENHAM.

Winter Spinach has done remarkably well in these gardens this season. We usually make four or five sowings, and all except one has been a complete success. The prickly-seeded variety is generally regarded as the most hardy, but I find no difference in this respect between other Winter Spinach, and our cold, heavy land cannot be regarded as a favoured one for this wholesome and useful vegetable. Frequently Winter Spinach is sown too early, with the result that if a mild autumn follows the plants suffer considerably. I have often found that sowings made as late as the first week in October give the best results.

The photograph reproduced in fig. 49 shows a bed of Harbinger Cabbages on a warm border in these gardens. The photograph was taken on December 31 last, at which time a large percentage of the heads were fit for cutting. The seed was sown at the end of July and the seedlings planted out early in September. Not a single "rogue" has resulted from the sowing. *F. Beckett, Aldenham House Gardens, Elstree.*

Fig. 48.—WINTER SPINACH AT ALDENHAM HOUSE GARDENS.

LEEKS.

The Leek constitutes one of our most useful vegetables during winter and spring, and is, moreover, one of the hardiest of plants, no amount of frost seeming to do it any damage. To obtain good specimens seed should now be sown in pans or boxes, using a light, finely-sifted compost. Crock the receptacles well, place some rough turf or leaves over the drainage, and fill nearly to the top with the soil. Press the compost firmly, and sow the seed thinly on the surface, covering it with fine soil and water with a rose can. Place the pans or boxes in a warm greenhouse, and cover them with glass and paper to retain the soil moisture. The seeds will soon germinate, and when the seedlings appear, remove the glass and paper and stand the seed pans on a shelf close to the roof-glass. As the plants gain strength remove them to a warm frame and admit air on mild days to keep them sturdy. When the plants are large enough to handle they should be pricked out about 2 inches apart in boxes 2 feet long, 1 foot wide, and 5 inches deep. Carefully crock the boxes and fill them to the top with a compost composed of two parts loam, one part leaf soil, and one part old hot-bed or Mushroom-bed manure, with a little sand. A 6-inch potful of bone-meal to a barrow load of soil will also be beneficial. Mix the soil thoroughly, and press it firm in the boxes. An important point in pricking out is always to take care to lift as many of the young roots as possible, and in inserting them in the soil take care not to bruise them. As the

boxes are filled water the plants, and grow them in a warm frame close to the glass. Keep them close for a few days, but afterwards admit plenty of air, and about midday syringe them with tepid water. When the plants are strong enough they may be removed to a cold frame, covering the light with mats at night in case of frost. On warm days remove the lights for a time, and, with care in watering, the plants will do well until planting time arrives. The best Leeks are grown in trenches, which should be made ready during the winter. For a single row, 15 inches will be wide enough, and for a double row 2 feet. Mark out as many rows as are desired, and take out the soil 1 foot deep, placing this on both sides of the trench. Then shovel out the crumbs and place a good dressing of farmyard manure in the trench, thoroughly incorporating it with the soil. Afterwards put back some of the soil taken out to a depth of 4 or 5 inches. Fork over the ridges between the trenches, and leave all in a tidy condition. The time for planting varies according to weather conditions, but some date in April is usually the best time, provided the plants have been properly hardened. The trenches should then be raked over and made firm, taking care to do this during dry weather. Have the boxes close by, lift the plants with a trowel, and place them down the middle of the trench (if a single row) at about 1 foot apart. Plant firmly, rake over neatly when finished, and water in with a rose can. On warm days the plants may be syringed or damped overhead during the afternoon. As soon as they commence to grow blanching should commence, which is attained by gradually building up the soil from the ridges round the plants, placing a few inches at a time up as far as the leaf growth, and so on, until a stem of quite 2 feet is blanched. Before earthing up is commenced, however, the trenches should be well watered with diluted liquid manure. Stiff paper or tin collars about 9 inches long are sometimes used, placed over the plants soon after they are put out, and drawn up every time the soil is put to them. As the work proceeds it is advisable to tie the foliage with a piece of raffia to prevent soil from lodging in the crown of the plants. When the final earthing up is finished the banks of soil should be made sloping, and patted down with the back of a spade, so that superfluous moisture from heavy rain or snow may not be retained. Those who have not the advantage of warm houses or frames need not despair of growing Leeks in this way if the directions as to sowing and planting are carried out. The seed will germinate quite well though more slowly, in a cold frame. The varieties differ in appearance. Those, such as Broad Flag and London, which have very wide, strong foliage, are reckoned the hardiest. Others, such as Lyon, Prizetaker, and International are narrower in the leaf and long stemmed. They are all good sorts to grow. *B. W. Thatcher, Carlton Park Gardens, Market Harborough.*

PARSNIPS.

A WELL-CULTIVATED plot of Parsnips provides much useful food, and this vegetable is deserving of a more extended cultivation. Early sowing is to be recommended, but there is still plenty of time to make preparations for sowing the seeds in deeply dug ground. In these times labour for very deep digging is difficult to find, but good crops may be obtained from land which has been dug in the ordinary manner without the trouble of double digging. Choose rich land and an open situation. The soil should be thoroughly broken with a fork, and when the surface has been made fine and level, sow the seed thinly in drills made 18 inches apart and one inch deep. Choose a calm day if possible for sowing the seeds, as they are light and easily carried away by the wind. Cover them lightly at once, and in doing this do not rake the drills, as this would disturb the seed. Slugs are often troublesome as the young plants are breaking through the surface, and must be kept in check by frequent applications of soot or lime, applied very early in the mornings, whilst the slugs are still feeding. When the seedlings are 2 inches high they should be carefully thinned to 9 inches or 1 foot apart in the rows, according to the nature of the soil. Very little attention is necessary during the summer beyond keeping the soil between the rows hoed. One great advantage in having a good plot of Parsnips in every garden is that is ensures a supply of nutritious vegetables in winter, when other crops may be destroyed by frost. *J. Dunn.*

VEGETABLES FOR FORCING.

Potatos grown in pots or planted out in the border in a cool house return a good yield. Roots 9 or 10 inches in diameter are suitable. They should be efficiently drained with potsherds and half filled with a compost of which the strong sound loam should be good, fibrous loam. One selected tuber may be just buried in each 9 inch pot and the soil well watered. The development of the plant will be fairly rapid. As growth proceeds top dressings of rich soil should be added until the pot is filled to within half an inch of the rim. Stimulants may be given in moderation; applied to excess they impair the flavour of the tubers. An application once a week is sufficient, and I commence giving the stimulant as the young tubers begin to swell. Sulphate of ammonia and dilute liquid manure from the farmyard are given alternately. Last year our Potatos were attacked by aphis. This pest spreads with astonishing rapidity, and I would suggest that if observed prompt measures be taken for its extermination. An approved insecticide or paraffin soft soap wash should be used as a specific. Potatos require much the same treatment in an inside border as those outside. The rows may be made a little closer, say 18 inches apart, and the sets put 10 inches asunder. No rainfall will reach them, therefore it is necessary to attend carefully to watering. Duke of York and May Queen are two good varieties for early forcing. French Beans are forced into early bearing in great numbers. The plants should be grown in pots 8 or 9 inches in diameter. The pots should have plenty of drainage material, and be half filled with good soil. Twelve or fourteen seeds may be sown in each pot, subsequently thinning the seedlings to eight. French Beans germinate rapidly in a temperature of 65° to 70°. At all stages of growth they require an abundance of moisture. The atmosphere should also be kept humid, except when the plants are in bloom, but a moist atmosphere at that stage would militate against a good "set" of pods. Top dressings of equal parts fibrous loam and well-decayed manure should be applied as needed. After the pods have set and commence to swell the roots should be given weak liquid manure and soot-water, applied alternately. Red spider is a great pest of French Beans, and measures should be taken to destroy the insect as soon as it is detected. Fumigation on every other night for a few nights will usually destroy red spider, and syringing twice a day is a good insecticide to use. Sutton's Superlative and Osborne's Early Forcing are two excellent kinds for forcing.

Peas may be sown in pots just at once for planting out the third week in March. Boxes 1 yard long and 9 inches wide are much used. The bottom boards should be cut to fit to slide out when planting; the plants set this way receive only a slight check when they are planted. The seed will germinate freely in a cool house. Any of the early varieties are suitable. Broad Beans raised in this manner come into bearing much earlier than those sown in the open. *Geo. H. Copley, Horton Park Gardens, Bradford.*

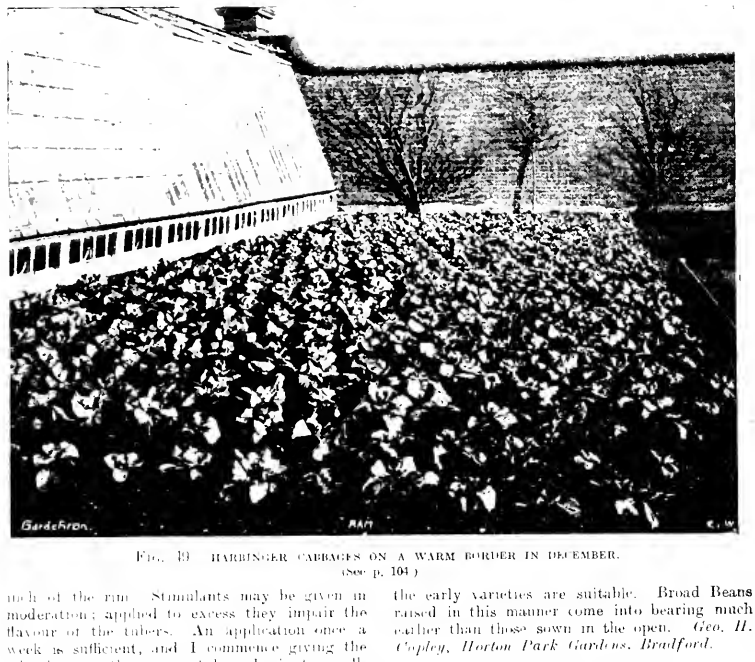


FIG. 39.—HARBINGER CABBAGES ON A WARM BORDER IN DECEMBER. (See p. 104.)

THE POTATO CROP.

THE Food Production Department's Commissioner for the Lincolnshire, Rutland, Nottinghamshire, and the Soke of Peterborough area sends some extremely interesting particulars supplied by leading local agriculturists as to the cropping of their holdings in the arable land part of his district. The figures with respect to 9,870 acres of land in the three estates concerned show that 2½ per cent. only of the land is now pasture, the whole of the rest being, or about to be, placed under cropping. In reply to questions as to what progressive farmers had done by way of altering their methods to produce the maximum amount of essential food crops (cereals and Potatos) Messrs. W. Dennis and Sons wrote: "Since war broke out we have broken up and converted into arable approximately 1,000 acres of grass. Our cropping under Barley has been considerably reduced in favour of Wheat. Oats have also been cut down, but

not to the same extent, and again in favour of Wheat. The cultivation of Onions is an innovation. Mustard for seed has been cut out entirely. Flax is a new departure."

In the eastern Potato-growing districts farmers have begun to draw out the ridges, and unless the weather should change for the worse planting will begin shortly.

The acreage of well-established pasture land and of old grazing land in this area ploughed up for Potatos is stated to be very large. The tractors are ploughing a great deal of grass land 10 inches deep, and the latest model steam cultivators, working on land belonging to the Ecclesiastical Commissioners, are ploughing four furrows each 14 inches deep and 18 inches wide in many fields. These cultivators are reported as leaving the loam in perfect condition for the drawing out of ridges with the Potato plough, the turf being completely buried and a strip of ground 2 yards wide turned over at each journey.

ALLOTMENTS.

THE average increase in the number of new allotments for the four weeks ending February 16, laid out under the Cultivation of Lands Order by local authorities, was at the rate of about 10,000 plots weekly. These figures, however, take no account of the large number of new allotments provided by private arrangement.

MUNITION WORKERS' ALLOTMENTS.

BY arrangement with the Food Production Department, the Ministry of Munitions has undertaken to communicate with all munition factories and to recommend that steps shall be taken by the managements to secure land for cultivation by the munition workers. The produce of the allotments, it is proposed, shall be available for the munition canteens.

ALLOTMENTS IN SCOTLAND.

THE demand for new allotments in Scotland is still on the increase, and public bodies are endeavouring to meet it with praiseworthy activity. In Glasgow and Edinburgh many new allotments are being asked for and provided. Hawick Food Production Committee has acquired additional land, for which they have between 70 and 80 applicants. Dumfries Town Council has also secured more ground, and had upwards of 70 applicants; while the neighbouring burgh of Maxwelltown is also adding considerably to its allotments. Lord Elphinstone has offered a piece of land to the mining village of Elphinstone for allotments.

HOME CORRESPONDENCE.

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

IRIS ROSENBACHIANA (see p. 75). — Mr. Dykes has adopted what appears to be a satisfactory way of growing Iris Rosenbachiana, *i.e.*, in a frame, closed in summer, but open in winter until the flowers appear. I presume the frame is kept closed until danger from late frosts is over? In the open, frost is often destructive to this Iris. By the way, does Mr. Dykes find much variation in the colour of his seedlings? Imported plants vary considerably in this respect. *S. Arnott.*

UNDESIRABLE APPLES (see pp. 66, 91). — I agree with Mr. Molyneux that there are far too many varieties of Apples. In his list of condemned sorts there are three or four I consider worth a second thought: King of the Pippins is one. The tree is a small grower, taking up but little room, and when grown on a good loamy soil the fruit is of the best quality, its crimson colour next the sun, chrome-yellow on the shade side, and firm yellow flesh are all desirable qualities. The variety, however, is very poor on some soils. Bess Pool has two faults: The tree takes a long time to fruit, and it requires a lot of room; but it has proved to me one of the most useful Apples in season from October to April. The fine, healthy foliage, clean, smooth wood, and handsome crimson-covered white-fleshed fruits are all points in its favour. Is Mr. Molyneux sure that in some districts Mank's Codlin is not required? The fruits are in season when there are plenty of other Apples, and the skin is very oily. My trees of Hawthornden fruit every year. I admit that the variety is subject to brown rot in some places. May I suggest that Mr. Molyneux add Hoary Morning and Rosemary Russet to his list? Lemon Pippin is very poor in quality, but the tree fruits well in some places, and is a late variety. Is it possible to get a census from, say, fifty districts, giving a list of the best twelve to twenty sorts from large and small gardens, nurserymen, and market-growers? I would willingly take two districts and find out the sorts that pay best. *Pome.*

—— Mr. Molyneux's note in reference to the elimination of useless varieties of Apples suggests the desirability of reducing the number of varieties of certain vegetables, such as Peas. We owe much to the firms engaged in the raising of new varieties in that they have been mainly responsible for the great improvement in the cropping capacity and qualities of our vegetable and fruit crops. It would, however, be an inestimable boon to the food producer if in this progressive introduction of new varieties of superior degree, a corresponding elimination of presumably superseded sorts was effected. An organisation for the testing of new varieties is needed, and at the same time proscribe worthless and too-much alike sorts. The R.H.S. has done something in this direction, but the great defect of their work is that their trials have been conducted at one centre only. Furthermore, their power is only of a moral or suggestive nature. Tests would have to be instituted with due regard to the behaviour of any variety under the various soil and climatic conditions existing, for instance, in England and Wales; and it is here that I wish to show the necessity of such a searching test by reference to Mr. Molyneux's condemnation of Domino. This Apple is certainly inferior in size when compared with Early Victoria and Lord Grosvenor, and may be even slightly inferior in quality, but here in the North of England it proves one of the most consistent of croppers, and exhibits a remarkable freedom from canker when grown in cold, clayey soils. With regard to the other varieties he mentions, I would plead only for King of the Pippins and Duchess's Favourite, which I include in the very few dessert sorts that are a success. *Chas. Watts Mayhew, Northumberland County Horticulturist.*

SOCIETIES.

ROYAL HORTICULTURAL.

TRIAL OF LEEKS.

THE following awards have been made to Leeks by the Royal Horticultural Society after trial at Wisley:—*Awards of Merit:* Champion, sent by Messrs. Dobbie and Co.; International Prize, sent by Messrs. Dobbie and Co.; Prize-taker, sent by Messrs. Sutton and Sons; and Royal Favourite, sent by Messrs. Sutton and Sons. *Highly Commended:* Improved Musselburgh, Large Early Poitou, Large Rouen, Renton's Monarch, and The Lyon. *Commended:* Giant Wonder.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

FEBRUARY 21.—*Committee present:* Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, J. J. Bolton, D. A. Cowan, J. C. Cowan, J. Cypher, A. G. Ellwood, J. Evans, J. Howes, A. J. Keeling, J. Lupton, D. McLeod, J. McNab, W. Shackleton, H. Thorp and H. Arthur (secretary).

AWARDS.

FIRST-CLASS CERTIFICATES.

Cattleya Snowflake Gratrixiae (labiata alba × Dusseldorfi Undine), a well-formed white flower with canary-yellow markings in the throat; *Odontoglossum crispum Trojan*, both from S. GRATRIX, Esq.

Odontoglossum Lawre-crispum (Lawrenceanum × crispum), bright yellow with crimson spots; *Odontioda Dorothy (Oda. Vuylstekei × Odm. crispum)*, exhibited by P. SMITH, Esq.

Odontioda Xeres (Odm. elegans × Oda. Charlesworthii), a large, chestnut-red flower, with broad, flat lip, from Col. Sir J. RUTHERFORD, Bart.

O. Diana Hamilton (Cochlioda Noezliana × Odm. amabile), shown by J. H. WALKER, Esq.

Miltonia Venus (rexillaria × Phalaenopsis), from Messrs. CHARLESWORTH AND CO.

AWARDS OF MERIT.

Odontoglossum ardentissimum Tiger, Lycaste Bessie Brown, Cattleya Trianae Mooreana, and Dendrobium Ophir (nutcum × signatum), exhibited by S. GRATRIX, Esq.

Odontoglossum highfieldense (Harryanum × Vuylstekei), from R. ASHWORTH, Esq.

GROUPS.

Large Silver Medals were awarded to R. ASHWORTH, Esq., Newchurch (gr. Mr. Davenport), and Messrs. CYPHER AND SONS, Cheltenham, for collections.

LINNEAN.

AT the meeting of the Linnean Society held on the 21st ult., a paper by Mr. William B. Brierley, entitled "Experimental Studies in the Specific Value of Morphological Characters in the Fungi," stated that in all systematic treatment of the fungi there is implied constancy of morphological characters, and particularly of the size and shape of the mature reproductive bodies or spores. An experimental study of the specificity of these criteria is in process, the work being carried out primarily upon the fungus Botrytis cinerea. This species is contained in the "Polyactis" group of the genus, and the species in this group are separated partly by reason of their different hosts, but more critically by minute differences in the branching and septation of the conidiophore and by the size and shape of the spore.

The published spore-measurements of Botrytis cinerea show a singular lack of uniformity (Marshall Ward on Lily, 20-25 $\mu \times 15\ \mu$; Lorrain Smith on Gooseberry, 8-11 $\mu \times 4\text{-}6\ \mu$; R. E. Smith on Lime trees, up to 30 μ; etc.), and during the present investigation observations of the mode-spores of Botrytis cinerea growing upon different hosts, or separate infections of the same host, have shown that this variation in size and shape is a very marked feature of the fungus (on Alder twig mode-spore $3\ \mu \times 2\ \mu$; on Tomato fruit $10\ \mu \times 10\ \mu$; on Onion bulb $6.5\ \mu \times 3.5\ \mu$; on Lily $14\ \mu \times 10\ \mu$; etc.).

Pedigree cultures derived from single spores of the fungus growing upon different hosts were made, and these were used as the basis for all critical experimental work.

Botrytis cinerea developing upon living Cabbage possesses a certain mode-spore. If this strain be inoculated into Tomato fruits, the mode-spore is different in size and shape; and a third host produces a third mode-spore. The fungus growing upon Onion bulb shows a characteristic mode-spore, and if this strain be inoculated into Cabbage, Tomato, etc., the mode-spores differ from each other and from those produced by the first strain. Variations and combinations of these experimental inoculations were carried out with strains of different origin, the substrata being living plants, steamed tissues, and synthetic media, and the sizes and shapes of the mode-spores were recorded. It became evident that the species Botrytis cinerea is not "ungeheuer variabel" (Lindau), but that its apparent variability is due to the fact that it contains a great number of "elementary species" or "Jordan's species" which are morphologically distinct. The size and shape of the spores of the "elementary species" show two kinds of variation: (1) normal variation, which is always present upon whatever host or substratum the fungus develops, and the range of which is characteristic of the elementary species; and (2) "modal variation," which is the variation in the size and shape of the mode-spore, and is directly and constantly induced by the particular substratum. In nature the "elementary species" are usually found upon par-

ticular hosts, but they readily attack other plants and, when growing saprophytically, are omnivorous.

The size and shape of the spores of the fungus growing in nature are therefore not morphological constants but resultants of the strain of the fungus and the substratum upon which it is developing; and the only method of critically identifying the particular elementary species present is to isolate it in pure culture and obtain its "modal variation" upon a series of standardised media.

The presence of modal variation in the size and shape of the spores has been ascertained in three species of Penicillium and one species of Stysanus which have been investigated, and it is suggested that it may be of general occurrence in the fungi.

Other morphological characters of Botrytis cinerea—rapidity of growth, minute details of physiology of parasitism, septation and branching of conidiophore, structure of sclerotia, etc.—are being investigated, and are yielding results of a similar nature, and it appears not improbable that the present species in the Polyactis group of the genus must be regarded as host forms of elementary species of Botrytis cinerea.

"Modal variation" is not due to physiological starvation or repletion or other known nutritional conditions resulting from various substrata. It is suggested that it may be due to some growth-stimulant or accessory food-factor, which is constantly present to a different degree in different food-substrata.

CROPS AND STOCK ON THE HOME FARM.

STORING LAND.

STORING is a term used to denote cross-ploughing, which disintegrates the particles of clods, disturbs grass or other weeds and exposes the soil to air, wind and frost, making it all the more friable when the time comes for sowing whatever crop is intended to be grown. During dry, frosty weather no opportunity should be missed in storing land intended for Potatos, Mangolds, or Spring Corn, and especially Barley that is to follow Wheat.

SCREENING OATS FOR SOWING.

It is wise to screen home-grown Oats before sowing after coming from the threshing machine, to remove the small corn. Seed obtained from a seedsman does not require such attention, as the seedsman removes all weakly corn. I fail to see how small, immature Oats can produce a plant as strong as a larger, more solid seed. In screening there is no loss whatever, because the rejected Corn can be used as food for horses. I treat Wheat for sowing in the same way, as evenness of seed gives a more even and desirable crop.

SUNFLOWER SEED FOR FODDER.

IN view of the shortage of food for poultry, Sunflowers might be made more use of for this purpose, and also for pigs. If the seeds are matured they contain much oil, which is valuable when the seed is crushed and added to other food, and especially for pigs. Sunflowers require not only a long season of growth to mature the seed properly, but much sunshine at the ripening stage. If only a few plants are grown the plants could be advantageously raised under glass if even a cold frame only is used six weeks would be gained by that method, and with a reasonable amount of sunshine success might be anticipated.

It is wise to grow a tall and a dwarf variety in the same row, as the plants would then receive more regular sunshine than if all were tall plants. Giant Russian, referred to on p. 74, is the best variety. If seeds of that variety are not procurable the American Giant form should be planted. Deeply cultivated and well-manured soil is necessary to ensure success. Deep autumn ploughing would be an advantage, and ploughing again in the spring to obtain a good surface tilth. Ample space is required for the plants. The rows should not be closer than 3½ feet, and the plants thinned to 15 inches apart in the rows. Dibbling the seeds 2 inches deep, two in each hole, is the most certain way of sowing, and the seeds are then more out of the reach of rooks than when drilled in shallowly. If a large area is to be sown—say several acres—and the soil in good tilth, then drilling, under favourable conditions, would be preferable.

Keep the plants free from weeds and, as the flower-heads form, thin them to four of the strongest on each plant. In a small plot the application of liquid manure to the roots during dry weather would be a distinct benefit to the plants. In a field crop sprinkling superphosphate or sulphate of ammonia on the surface soil occasionally would aid growth, and especially if the surface soil is occasionally stirred to enable the rain to wash the stimulant freely amongst the roots.

JERUSALEM ARTICHOKES FOR PIGS.

WITH the diminishing quantity of cereals, pig-keepers must provide substitutes on which pigs can be kept a considerable part of the year with but little meal.

The Jerusalem Artichoke produces a large crop of tubers with good cultivation, and the cooked tubers provide much desirable food for small pigs, supplemented by house scraps and a small quantity of meal. Sows appreciate the tubers in a raw state. Too often this Artichoke is allotted out-of-the-way corners where it grows for many years, even without replanting. Plants grown in such unsuitable situations cannot produce heavy yields of tubers, but well manured and deeply cultivated land of any kind in the open will grow large crops of this Artichoke. The tubers should be planted at once in rows made 2 feet apart, allowing a space of 15 inches between the plants in the rows. As planting proceeds sprinkle superphosphate over the tubers to aid their growth.

The subsequent treatment consists in keeping the land free from weeds and stirring the surface two\[illegible\] during growing weather.

An error crept into last week's remarks on the subject of the prices of pigs. With regard to the sow and young pigs sold for £23, it should have been stated that the young ones numbered nine, and were three weeks old. Further, the bacon sow sold by weight realised £22, not £25 as stated.—*E. Molyneux.*

Obituary.

G. ALLARD. *Le Bon Jardinier* announces the death of Mr. G. Allard, vice-president of the French Dendrological Society. Mr. Allard was widely known by reason of the fine arboretum which he established at la Mardeverie, near Angers. This collection is an important one, and particularly from the point of view of trees and shrubs which do well in the west of France. The arboretum occupies about 17 acres, and was planted entirely by Mr. Allard, who undertook the work after a series of voyages of investigation in the Mediterranean region, including Northern Africa. The first plantations were made in 1865, and the Sequoias in the collection date from that year. The important collection of Oaks was planted in 1876, and comprises more than 100 species, varieties and hybrids. Beside these trees the arboretum contains a rich collection of Camellias and of cultivated Vines which fruit in the open. Among the most interesting and rare specimens noticed by Parde in a report published in 1904 mention may be made of Fitzroya patagonica, Libocedrus tetragona, Picea Morinda, Quercus crassipes, Sequoia gendalis (20 metres high), Picea Omorika pendula, hybrid Chestnuts (Castanea × mollissima and Castanea × regalis), Robinia dubia (Pseudacacia × viscosa), Fraxinus globosa × pennsylvanica, and hybrid Oaks. Unfortunately no catalogue of the arboretum has been published, but there is a certitude that the arboretum will be continued, for Mr. Allard has bequeathed his estate to the Pasteur Institute (Paris), with the condition that the Institute shall provide for the maintenance of the collection at la Mardeverie.—*L. M.*

MARKETS.

COVENT GARDEN, March 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 average 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.

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

	s. d.	s. d.		s. d.	s. d.
Adiantums, per doz.	4 0	8 0	Eucharis	5 0	8 0
Azaleas	12 0	24 0	Ficus	18 0	24 0
Aucubas, per doz.	6 0	8 0	Hydrangeas	21 0	24 0
Asparagus plumosus	10 0	12 0	Cyclamens	21 0	24 0
— Sprengeri	10 0	10 0	Cinerarias	10 0	12 0
Aspidistra, green	30 0	42 0	Genistas	18 0	24 0
			Marguerites, white	9 0	10 0

Ferns and Palms: Average Wholesale Prices.

	s. d.	s. d.		s. d.	s. d.
Adiantum cuneatum, 48's, per doz.	9 0	10 0	Nephrolepis, in variety, 18's	12 0	18 0
— elegans	9 0	10 0	24's	21 0	36 0
Asplenium 18's, per doz.	9 0	12 0	Pteris, in variety, 48's	8 0	12 0
24's	21 0	24 0	— large 48's	4 0	5 0
indus, 18's	10 0	12 0	— small 60's	3 0	3 6
Cyrtomium, 48's	8 0	10 0	— 7½'s, per tray of 18's	2 0	2 6

Cut Flowers, &c.: Average Wholesale Prices.

	s. d.	s. d.		s. d.	s. d.
Anemone fulgens, per doz. bun.	3 0	4 0	Lilium, coni — — short, per doz. blooms	3 6	4 0
Arums— — (Richardias), per doz. blms.	6 0	7 0	Lily-of-the-Valley, per doz. bun.	24 0	30 0
Azalea, white, per doz. bunches	3 0	4 0	Narcissus, Grand Primo, per doz. bun.	3 0	4 0
Camellias, white, per doz.	2 6	3 0	— ornatus	3 0	4 0
Carnations, per doz.			— Soleil d'Or	3 0	4 0
— blooms, best American var.	2 6	4 0	Orchids, per doz.— — Cypripediums	4 0	6 0
Croton leaves, per bun.	1 3	1 6	Pelargoniums, double scarlet, per doz. bunches	12 0	18 0
Daffodils (single), per doz. bun.	4 0	5 0	Roses, per doz. blooms—		
Eucharis, per doz.	6 0	8 0	— Ladylove	8 0	12 0
Eupatorium	3 0	4 0	— Niphetos	4 0	5 0
Gardenia, per doz.	3 0	4 0	— Richmond	8 0	12 0
— Mrs. Watkins	4 0	6 0	— Sunburst	8 0	12 0
Gladioli, per doz. bun.	4 0	6 0	Snowdrops, per doz bun.	2 0	3 6
Lilac, per doz. blooms	3 0	4 0	Tulips, per doz. blooms		
Lily of the Valley, per doz. bun.	3 0	4 0	— Darwin, various	3 0	3 6
Heather, white, per doz. bun.	9 0	12 0	— Single, white	3 0	4 0
Lilium longiflorum, long	6 6	7 0	— — Yellow	2 6	3 0
— Harrisii, long	6 0	8 0	— — Pink	2 6	3 0
— auratum, per doz. long	14 0	15 0	— — Red	3 0	4 0
			— Double, red	3 6	4 0
			— — Yellow	1 0	4 6
			Violets, per doz. bun.	2 6	5 0

French Flowers: Average Wholesale Prices.

	s. d.	s. d.		s. d.	s. d.
Anemones, double pink, per doz. bun.	3 0	4 0	Narcissus, tom. Gloriosa	8 0	10 0
— single, mixed	5 0	6 0	Soleil d'Or	4 0	6 0
Mimosa (Acacia), per basket	6 0	8 0	Ranunculus, carmine, per doz. bun.	8 0	9 0
Narcissus, per basket	6 0	8 0	— scarlet	15 0	18 0
Paper white	6 0	8 0	Stocks, white, per pad	6 0	8 0
			Violets, Parma, per bun.	4 0	5 0
			— Single	3 0	4 0

Cut Foliage, &c.: Average Wholesale Prices.

	s. d.	s. d.		s. d.	s. d.
Adiantum (Maidenhair Fern), best, per doz. bun.	8 0	10 0	Berberis, per doz. bun.	6 0	8 0
Asparagus plumosus, long trails, per half dozen	2 6	3 0	Carnation foliage, doz. bunches	4 0	5 0
— medium, doz. bunches	1 8	0 2 1 0	Cycas leaves, per doz.	3 0	6 0
Sprengeri	10 0	15 0	Ivy leaves, per doz. bunches	2 0	2 6
			Moss, gross bun.	7 0	8 0
			Smilax, per bun. of 6 trails	2 0	2 6

REMARKS. There is a shorter supply of flowers this week, and the prices of Lilium longiflorum and Richardias (Arums) are increased. Owing to rough weather there were no flowers from Scilly and Guernsey during Friday and Saturday last, but fairly large consignments are being received this week, chiefly consisting of Daffodils, which are arriving in good condition. Tulips are increasing in quantity as well as quality, there is now a good selection of Darwin Tulips of various shades. Roses are increasing daily in numbers, such varieties as Ladylove, Sunburst, and Richmond being offered in excellent condition. Prices are on the down grade. Lily-of-the-Valley continues plentiful in supply, and daily consignments are reaching the market, chiefly from our

grower. Little change is noticeable among the consignments of French flowers. White Narcissus appears to be getting over, but more white Stock is arriving. Anemones are cheaper.

Vegetables: Average Wholesale Prices.

	s. d.	s. d.
Artichoke, Chinese (Stachy) per lb.	1 3– 1 6	
— Globe, per doz.	3 0– 4 0	
— Jerusalem, per ½ bushel	2 6– 3 0	
Asparagus (English), per bundle ...	10 0–12 0	
— National, per bundle ...	7 6– 8 0	
— (Paris Green), per bundle ...	40 0–50 0	
Beans:		
— French (in pod) per lb.	3 0–12 0	
— Runner (shelled) per lb.	0 6– 1 0	
Beetroot, per bus.	3 0 —	
Brussels Sprouts, per ½ bus. ...	2 0– 2 6	
Cabbage, per tally	6 0– 8 0	
Carrots, new, per doz. bunches ...	3 0– 4 0	
— per bag ...	3 6– 4 6	
Cauliflowers per doz	4 0– 6 0	
Celeriac, per doz.	7 0 —	
Celery, per bundle	1 6– 4 6	
Chicory, per lb. ...	0 6– 0 8	
Cucumbers, per doz.	9 0–15 0	
Endive, per doz. ...	1 6– 6 0	
Garlic, per lb. ...	0 8 —	
Greens, per bag ...	2 0– 3 0	
Herbs, per doz. bun.	3 0– 4 0	
Horseradish, per bun.	3 0– 4 0	
Leeks, per doz. bun.	1 6– 4 0	
Lettuce, Cabbage, per doz. ...	2 6– 3 0	
Mushrooms per lb.	2 6– 3 0	
Mustard and Cress, per doz. punnets	1 3– 1 6	
Onions, French, per cwt ...	34 0 38 0	
— spring, per doz. bun. ...	1 6– 3 0	
— Valencia, per case (4 tiers) ...	35 0 42 0	
— — (5 tiers) ...	35 0–42 0	
Parsnips, per bag ..	6 6– 7 0	
Peas, per lb. ...	2 6– 3 0	
Potatos, new, per lb.	1 3– 1 8	
Radishes, per doz. bunches ...	1 6– 2 6	
Rhubarb, forced, per doz. ...	2 0– 2 9	
Savoys, per tally ...	8 0–10 0	
Scalkale, per punnet	2 6– 3 0	
Shallots, per doz. lbs.	8 0–10 0	
Spinach, per bus. ...	6 6– 8 0	
Swedes, per bag ...	11 6– 2 6	
Turnips, per bag ...	0 0 —	
Turnip tops, per bag (72 lbs.) ...	5 0 —	
Watercress, per doz.	0 10– 1 0	

Fruit: Average Wholesale Prices.

	s. d.	s. d.
Almonds, per cwt	170 0 —	
Apples:—		
— Eating, French, measured about 60 to 70 lbs. ...	42 0 50 0	
— selected samples ...	25 0–30 0	
Dates, per box ...	1 4 —	
Grapes, Black Alicante, per lb.	4 0– 6 0	
— Almeria, per barrel (3½ doz. lbs.) ...	45 0–70 0	
Grapes, con — — Gros Colman, per lb ...	4 0– 8 0	
Lemons, per case...	38 0– 40 0	
Nuts, Barcelona, per bag ...	170 0 —	
— Cob, per lb ...	1 0– 1 10	
Oranges, per case ...	42 0–150 0	
— navel, per case	50 0– 55 0	
— Tangerines, per 100 ...	1 8– 0 —	
Strawberries, forced, per lb.	15 0–25 0	
Walnuts, kiln dried, per bag ...	52 0–1.0 0	

REMARKS. Supplies of English selected Apples are now very limited, but there is still a quantity of inferior samples on offer. Forced Strawberries are arriving daily in limited quantities. The market is well supplied with English Grapes for the season of the year, and fairly large quantities of Almerias (Spanish) are available. Forced vegetables are now commencing to increase daily in quantity. Vegetables and roots (outdoor) are fairly plentiful, but buyers complain that, owing to the shortage of meat, vegetables are selling cheap. *E. H. R., Covent Garden Market, March 5, 1918.*

CATALOGUE RECEIVED.

Foreign.

PETER HENDERSON & Co., 35-7, Cortlandt Street, New York.—Seeds.

HENRY A. DREER, 714-6, Chestnut Street, Philadelphia, U.S.A.—Seeds.

ENQUIRY.

CAN your readers give me any information how to cement coat wire nails: also what kind of cement to use for nails in Apple boxes for market. *L. B.*

ANSWERS TO CORRESPONDENTS.

BANKSIA ROSE: *L. W. C.* Beyond thinning the weakly growths and removing dead shoots, no further pruning is necessary.

CELERY TRENCHES: *L. W. C.* Take out a trench 1 foot wide for one row of Celery, or 18 inches for a double row, and 12 inches deep. In the bottom of the trench place half decayed manure to a depth of 6 inches and cover the manure 3 inches deep with soil from the side of the trench. Set the plants out in the middle of April 10 inches apart, and water them freely in dry weather to promote freedom of growth.

CONIFERS: *Constant Reader.* Most of the standard works on Coniferæ, such as *Veitch's Manual of Coniferæ* and *Gordon's Pinetum*, are out of print, but copies are sometimes listed by second-hand booksellers. *Trees and Shrubs Hardy in the British Isles*, by W. J. Bean, in two volumes, contains descriptions and illustrations of many Coniferous trees. It can be obtained from our publishing department, price £2 2s. 10d. post free.

HOLLY TREE: *T., Ruthett.* The Holly is one of the most uncertain trees to berry, and a plant growing by itself is less likely to fruit than where it is in association with others. Try budding your plant in August with buds from a tree that fruits well and regularly: this has been known to answer in many cases, though it is not an absolute certainty.

LEAVES FOR EXAMINATION: *T. G.* Such scrappy specimens as those you send are insufficient for correct identification of the cause of their condition, especially as you do not even mention the names of the plants. Some have been eaten by an insect, probably a cockroach, which has gnawed off the epidermis of the leaf, leaving dead patches. What appears to be the leaf of a Chrysanthemum is attacked by a leaf-mining insect. In the case of the Chrysanthemum remove all badly affected leaves and burn them, and spray the plants with Quassia extract or some other insecticide to prevent the female insect from laying her eggs on the leaves. The other plants should either be dipped in or sprayed with an insecticide.

MOLES IN THE GARDEN: *E. C.* We know of no other way of destroying moles than by the aid of spring traps, the japanned ones being preferable. Set the traps in the more recently made runs, just before rain, say in the evening, and inspect them on the following morning. The traps should be sunk well into the newly made burrows. As new upheavals of soil are noticed add more traps to these runs. By continuing to set the traps there should be no difficulty in clearing a garden of these pests.

MUSHROOMS OUT OF DOORS: *J. M.* Collect as much fresh stable litter at one time as possible, shake out the longest litter and dry it for covering the beds where clean straw is scarce. Place the manure in a compact heap to ferment, and turn the heap two or three days afterwards, and again every third day, four times in all, or until the rank gases of fermentation have passed off. An open shed is the best place in which to prepare the material, and the size of the bed will depend on the quantity of dung available. The ridges should be made in a favourable position from north to south, and be sheltered from north and east winds. Ridges 2 feet 6 inches to 3 feet wide, and the same in height, are the most suitable size. From July to January is the best time for making Mushroom beds in the open. Make the ridge firmly, placing the dung in layers of, say, 15 inches, and treading it well until the desired height is obtained. Cover the ridge with litter to protect it from rains and to retain moisture in dry weather. Mats or tarpaulin sheets may be used for covering the bed in winter. Place sticks in the ridge in several places, and examine them to ascertain when the heat has declined to 75°, which is a safe temperature to spawn the bed. Break each cake of spawn into twelve pieces and insert the portions 9 inches apart and 3 inches below the surface. After three or four days examine the ridge to make sure that the temperature of the bed is not more than 75°. If everything is favourable cover the ridge with 2 inches of fine soil in a medium state of moisture, and pat it firm with the back of a bright spade. Again cover the bed with litter in thickness according to the season. It is not necessary to examine the bed for a month, when it should be again covered with fresh litter. Sometimes the Mushrooms will appear in a month or six weeks, but patience is needed; if the beds are made properly, and good spawn is used, a crop will appear sooner or later.

NAMES OF FRUITS: *Mrs. E. P. R.* Mère de Ménage.—*F. W. O.* 1, Lady Lennox; 2, Normanton Wonder; 3, Flower of Kent; 4, Harvey's Wiltshire Defiance; Pear decayed.—*W. P. F.* Wheeler's Russet.

NAMES OF PLANTS: *F. W. O.* Eupatorium sp.—*W. C. Maiden.* Oncidium splendidum. The plant thrives best in a basked or pan suspended from the roof-rafters at the cooler end of the intermediate house. It requires the same temperature and similar treatment as Mexican Laelias, and may be grown with them wherever they are thriving satisfactorily. The species may also be grown in a pot on the staging in a well-ventilated situation. The value of a good specimen is from ten to fifteen shillings.

PASSION FLOWER: *T. J. H.* For growing out-of-doors Passiflora coerulea is the best species; the variety Constance Elliott has white flowers. Those you mention are too tender to be grown in the open all the year round, though they will succeed during the summer, but our winters are too damp as well as too cold for the plants. Passifloras may be obtained from most nurserymen.

PEACH TREES: *C. J. C.-S.* If the Peach trees are in flower it is too late to fumigate or syringe them with an insecticide strong enough to kill black aphis. Mix some Quassia extract and apply it to the affected shoots with a brush until a week or ten days after the fruits have set, then syringe the trees with the specific on alternate days and occasionally afterwards.

SLUGS: *T. J. H.* A narrow ring of sawdust round the plants is one of the best means of protecting them from slugs. The sawdust sticks to the creatures and renders them unable to move easily, though, of course, it does not kill them. Sawdust is easily obtainable, and can be renewed when it becomes too wet to be of use.

VINES IN POTS: *Mr. F. N.* Not much harm would be done in removing the stronger roots and transferring the vines to larger pots. The best method at this late date is to prepare a rich bed for the vines as in former years, and feed the roots with stimulants during the summer, repotting them into larger pots earlier next season.

WAGES FOR SKILLED WORK: *L. M. C.* For the kind of work you mention 1s. per hour would be a fair price to pay; such work would not last long. From 7 a.m. to 5.30 p.m., with half an hour for breakfast and one hour for dinner, would be a fair working day. A jobbing gardener who is known to be practical, thoroughly understanding such duties as pruning and the general routine of managing all kinds of fruit trees, would be worth double the wages of an unskilled man.

WHITE FLY IN GREENHOUSE: *C. P.* The small white fly you mention is probably a species of Aleyrodes. Since you say you have tried the ordinary fumigating compounds without success, you might try hydrocyanic acid gas, but as it is exceedingly poisonous the fumigation must be done with the greatest care. The house should first be carefully measured, as the proportions to be used depend on the size of the building. They are as follows: Sodium cyanide, ⅛ oz.; phosphoric acid, ¼ oz.; water, ½ oz., for each 1,000 cubic feet. Be careful to obtain perfectly pure acids, and to use the exact proportions given. At the strengths given the plants will not be damaged; one fumigation is sufficient to kill green fly, and will probably be adequate for white fly. You may, however, double the quantities of the ingredients, in which case it is possible that the young foliage of some of the plants may be injured. The best results are obtained by fumigating the house at dusk, and leaving it closed until the following morning. The plants must be perfectly dry, and the temperature should not exceed 60°. Do not place the acid in a metal vessel, or in paper, and drop the cyanide into it direct. During fumigation keep the house tightly closed, leaving no chink whereby the gas could escape, and after it is opened care must be taken to see that no one enters it until it has been thoroughly ventilated. For fuller particulars see *Gard. Chron.*, July 25, 1914, p. 65.

Communications Received.—T. L. I.—H. E.—J. E. W.—H. E.—D. K. F.—G. H. H. W.—C. R. S.—F. J. C. T.—E. J.—O. D.—F. A. H.

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CONTENTS.

ILLUSTRATIONS.

LILIES IN 1917.

RETROSPECTIVELY, the years as they rush on are, in the main, very much alike from the gardener's point of view; there are differences, of course, but they do not amount to much—a fine and dry autumn one year, an abnormally wet one the next, and so on, the effect being seldom sufficiently pronounced to make anything more than a hazy picture on the mental camera. But once in a while there comes a season so different from the rest that it makes for itself a red-lettered place on life's calendar and is not forgotten.

There have not been many such seasons in comparatively recent times, and a glance through memory's diary for five-and-twenty years reveals but a couple—the great frost of 1891 and the tropical summer of 1911. Men of riper experience than the writer can lay claim to will no doubt recollect the severe winter of 1860, when the common Laurel was killed outright, and gardening people do not need to be told what that implies.

To this short tally of memorable seasons the winter of 1917 should certainly be added, not perhaps because of an exceptional degree of cold, but by reason of the inordinate length of it, and the cruel grip which frost and polar winds combined to keep on spring, foiling it week after week in remorseless spirit, and giving way to the sun so grudgingly that in true Canadian fashion May was almost on the stage before there was the sign of a nest or a vestige of green in the hedgerows.

But though the experience was an inexpressibly disagreeable one to a generation of gardeners accustomed to a long series of gentle winters, the crowding of March, April, and May into one had its compensations, and the astonishingly beautiful transformation scene the sun set for us when at last winter had been finally worsted was by no means the least of them.

During the early months of the year everything, in horticultural parlance, was kept in its place, and plant life, frost-bound and chilled to the core, made none of those false starts—begotten of the union of the sun with the soft south wind—that in more normal seasons almost invariably lead to subsequent wailings.

Hence it came about that February, March, and even April passed without so much as a sign of a Lily thrusting through the crust of the earth, and when May was ushered in on the wings of the blackest of north-easterly winds one felt that winter had been prolonged beyond the limits of human patience.

We islanders are so used to the tricks of that incomparable conjurer the clerk of the weather that he is seldom able to spring a surprise upon us; we may, therefore, acknowledge the more ungrudgingly that with the coming of May, the sudden transition from winter to summer may be laid to his credit as a great coup. The magician waved his wand, and in a trice the earth was instinct with budding life. All the pent-up energy of the early months of the year burst forth and made a garden picture of inexpressible beauty.

Chaos it was, in truth, viewed from the standpoint of the regulation horticultural time-table, but chaos of inestimable beauty.

Lilies shared in the general rush to the sun, and managed it to such purpose that in five weeks they had made more growth than they usually put forth in twice that time. At the beginning of May no gardener could have supposed that by the middle of the following month the normal order of things would have been re-established. Yet so it was with Lilies, and a little later on, cowed by week after week of cloudless skies, they had not only made up all leeway, but were rather in advance of their usual dates. Had the promise of midsummer been fulfilled one could have written ungrudgingly of the past season, but the comparative absence of sun in July and an overplus of rain generally had the inevitable effect of spoiling a Lily year that promised remarkably well.

Not one of the European or Asiatic species showed the least trace of the harsh treatment meted out to them during the long winter; but the Lilies of the Western United States had obviously received a severe check, and were unable to throw off the effects of it. In the majority of cases this took the form of stunted growth and paucity of flower; but some few species, such as Kelloggii, maritimum and occidentale, found themselves unable to make more than a meteoric appearance, retiring below ground in rather precipitate fashion after a few weeks of half-hearted existence. At the time of writing, all these Lilies are well above ground, so evidently no permanent harm has come to the bulbs.

An oversight by which a basket of bulbs of L. Sargentiae and Willmottiae came to be left in the open last winter, unprotected and exposed to the unspeakable rigours of the first five weeks of the year, justifies the conclusion that these two species are frost-proof, and incidentally opens a channel for reflection. When remembered and retrieved, the bulbs were mere lumps of ice, and must have been in that state for some time; yet in due season they threw up splendid stems and flowered remarkably well—better, in fact, than others that had been kept out of reach of the frost. A more noble Lily in every way than L. regale, L. Sargentiae has still to prove itself such a good garden plant as the former. Cold has evidently no bearing on its well-being, but early winter rains have, and cultivators of this beautiful plant would do well to keep the bulbs as dry as they can while they are dormant from October till about the middle of January. The species needs as sunny a place as can be found for it, and soil from which lime is absent. L. Sargentiae is one of the most delicately fragrant Lilies we have, and in that respect takes after its cousin, L. sulphureum.

It is pretty generally known that, except in the case of a few species, such as L. pardalinum, croceum, Martagon, pyrenaicum, and one or two more, Lilium seed does not usually germinate if left to arrange matters as best it can, so that colonies of self-sown plants are by no means common. Those versed in such matters lead us to suppose that refrigeration has a beneficial effect on the germination of many seeds, and we may perhaps look in that direction for an explanation of the wonderful crop of self-sown Lily seedlings that was evident on every hand last summer, for the seed that fell to the ground in the previous autumn must have been frozen before the year was out.

Some of the Chinese species in particular were conspicuous in this respect, and the ground under plants of L. Willmottiae, Thayerae, and regale was green with the "grass" of innumerable seedlings. It was the same with the Californian L. Roezlii, and many of the European species, which, however, sow themselves pretty regularly.

It is not to be expected that many of these "windfalls" will survive to adolescence, for heavy toll is taken of such things by slugs, earwigs, woodlice, and the countless hosts of predatory insects that have somehow to pick up a living between dusk and dawn. A winter of exceptional severity seems to have no terrors for these creatures, for they were in unusual force last summer, and as the ranks of their natural enemies the birds were severely thinned by the cold, they were able to do even more harm than usual.

In connection with the germination of Lilium seeds, the following note from Mr. H. J. Elwes draws attention to a peculiarity, that is not, perhaps, so well known as it should be:—

> "In my monograph of the genus Lilium (1880) I stated, on the authority of Professor Duchartre that the seed of L. monadelphum does not show its cotyledons above ground. Lubbock, in his book on *Seedlings*, Vol. II., p. 577, writing of the Liliaceae, says that the cotyledon in this family is always aërial, and carries the seed up with it during germination. The late Mr. Wolley Dod stated that in this species this is not the fact, and I sowed a quantity of seed in the open ground some years ago with the view to testing it. These first appeared

above ground in the second season after sowing, but as slugs might have eaten off the cotyledons, I was not certain of the fact until now. In November, 1916, I sowed two pans of seed of this Lily, which have been kept in a cold frame facing north ever since, and are now (Feb. 25) just showing their first leaf above ground, six weeks or two months before the parent plant will [illegible]. An examination of these seedlings shows that the germination has been [illegible]. Though I could find no remains of the testa in the earth, and the [illegible] tiny bulbs prove that the [illegible] germinated last year. I shall be glad [illegible] whether this is the case in any other [illegible] Lilium."

Such a more helpful article begins to [illegible] the time of the year, and the right

of the Euhrion group, of which a good many examples are to be found in herbaria, generally tacked on to Orit misnamed and much misunderstood Lily, L. Browni leucanthum.

The connection between the Lily described under that name (*Bot. Mag.*, t. 7,722) and L. Brownii is indefinite, for though herbaria contain many specimens from Western China labelled "L. Brownii," the species has not yet been reported from that country, and none of the many so-called forms of L. Brownii collected there of recent years can be referred to it, the bulb of which is unique and unmistakable. The origin of L. Brownii is not known with certainty, and though the plant is cultivated in Japanese nurseries gardens, there is no record of it as a wild plant of Japan. It may possibly turn out to be a cultivated form of the Lily so magnificently named L. japonicum colchesterense, which is now [illegible]

that there is comparatively little difficulty in establishing colonies of Lilies raised from seed in this country, and L. Brownii is no exception to the rule. No doubt the fact that this species seldom if ever ripens seed in Great Britain has made the raising of one's own stock a little difficult, but nowadays, when seed of nearly every species is to be had, in one direction or another, by those who want it, growers should not have any trouble on the point.

Once established in her suitable conditions, L. Brownii can be relied upon to go on and flourish from year to year, for few species are more prolific in the production of offsets.

That fine hybrid, L. Parkmanii, seems to have appeared once more, having been regenerated by Mr. Hayward (*Gard. Chron.*, Sept. 1, 1917, p. [illegible]) and it is to be hoped may not be allowed to go out of cultivation again.

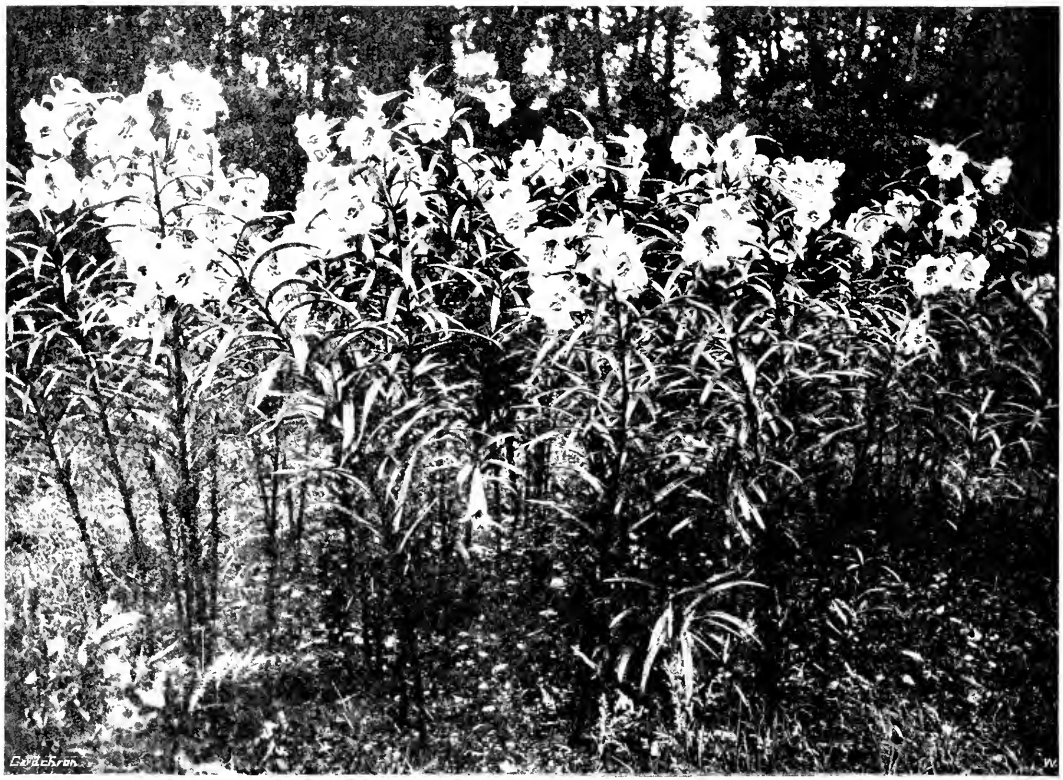

FIG. 50.—LILIUM BROWNII F. MACULATUM IN MR. [illegible]'S WOOD GARDEN AT HILLBROOK, BUCKINGHAMSHIRE.

ground development referred to by Mr. Elwes can be watched by anyone interested in the absorbing study of the meantime of plant life. Sometimes the seed of this and other species will lie dormant for a season, and it is not easy to [illegible] a strong explanation of this vagary. L. [illegible] takes the business of life in [illegible], and many species have flowered, [illegible] seed their race before it has attained the flowering stage.

So [illegible] is aware, nothing very new [illegible] Lilium species made an appearance [illegible] under the conditions prevailing [illegible] would have expected it to have been otherwise. From Messrs. Wallace a plant was received as L. Dalhousiæ, raised from seed received from Mr. Forrest, while Mr. Bowles sent a young flowering specimen of a Lily he had raised from seed sent home by Mr. Farrer from Kansu. This proved to be a species to be a native of Western China, as Mr. E. H. Wilson found it on Hupeh some years ago, and sent bulbs to the writer at the time. The bulbs of L. Brownii and the so-called varieties are as different as, shall we say, those of L. speciosum and Henryi. Though L. Brownii is not to be included in the list of species that will grow anywhere, the illustration (fig. 50) of a wonderful old colony of it in Mr. Yorke's wood garden at Hillbrook shows of what this fine Lily is capable when handled with sympathetic appreciation of its needs in the way of soil and location.

It is in the initial stages that would be growers of L. Brownii usually find themselves gravelled, and that is because, knowing no better, they rely on bulbs imported from Japan, which are as troublesome to establish as are all Lilium bulbs sent to Great Britain from countries afar off.

The writer has pointed out again and again

The cold winter seems to have suited L. speciosum remarkably well, and if only the weather in the late summer had been a little kinder, there would have been a magnificent display of this species. The photograph (fig. 51) shows an unusually fine flowering head of L. speciosum magnificum. *J. Grove.*

ORCHID NOTES AND GLEANINGS.

ODONTIODA ETHEL II.

At the meeting of the Royal Horticultural Society, on the 26th ult., Dr. Miguel Lacroze, Bryndir, Roehampton, showed as Odontioda Ethel var. Bryndir, a very pretty hybrid resulting from crossing Odontioda chelsiensis and Odontoglossum percultum. Messrs. Charlesworth and Co. had previously given the name Odontioda Ethel to a cross between Cochlioda

Norghana and Odontoglossum hastilabium, and Odontioda Ethel has also been exhibited by Messrs. Flory and Black. In view of the older plant having priority as to name, Dr. Lacroze's plant has been entered on the records as Oda Ethel H., following the precedent of Cypripedium Helen H., which was a duplicated name under similar conditions. Oda. Ethel H. is a specially attractive flower, the inner parts of the segments being densely spotted with orange-red on a light ground, the margins and outer thirds rosy lilac.

CYPRIPEDIUM BELTROILUS

MR. JAS. SMITH, Orchid grower to the Duke of Marlborough, Blenheim, Woodstock, sends a flower of Cypripedium Beltroilus, a rather curious hybrid between C. bellatulum and C. Thalia Lord Nelson (insigne Harefield Hall) interbreed raised at Blenheim, and now flowering for the first time. The dorsal sepal is white on the upper half and gamboge yellow on the lower part, with heavy blotches of chocolate brown changing to light purple in the smaller spots of the white area. The petals are 5 inches from tip to tip, 1½ inch wide, and show strongly the influence of C. bellatulum. The ground colour is yellowish tinged with rose and profusely spotted with claret red. The lip, which is larger than that of either parent, is pale yellow on the margin and unfolded side lobes, the surface being rose colour. The broad lower sepals are pale yellow with claret lines.

CONFESSIONS OF A NOVICE.

WHEN I read the leading article on the keeping of a garden in war time I experienced a thrill of satisfaction, for the programme and down therein is in essentials that which in the cloistered calm of my novitiate I had mapped out for myself. Everywhere in the borders and shrubberies I propose to plant Sunflowers, and this will, at all events, justify me in digging over the ground, which is thickly carpeted with two years' accumulation of Larch needles. I trust that British birds will refrain from their annual tricks and leave the seeds alone. Partly in desperation at the impossibility of obtaining manure except at a prohibitive price, and then with no prospect of getting it carted, and partly to self provide, I have already installed the piggery. We built the sty partly of old notice boards. It looks neat and trim, not yet occupied—and, facing the run, is a board stating the propitious sign, "This eligible residence to let." The trouble will, of course, be to obtain the offal or cake, but that trouble is, I believe, to be overcome by a licensed allowance for young pigs. I should have liked to run the pig on the extensive system, but this is a small place, and so perforce the pig must do the best it can with what offal we can give it plus household and garden refuse. The third oil producing organism, in addition to the pig and Sunflower—excellent as a sign for a wayside inn—is the goose, and if any of your readers knowledgeable in the raising of geese would give me a few encouraging hints I would willingly do my bit in the way of fat production by becoming a goose herd. Cobbett, in one of the early pages of his journal (*Rural Rides*), says of fat hogs at 7s. 6d. a score, the boot of profiteering was on the consumers' leg in those days, and we heard nothing about it that, fattened on Peas and Barley meal, they "may be called the very best meat that England contains." I shall try Peas on a piece of newly turned up grass land in the hope of obtaining a supply for the pigs, because I cannot help thinking, first, that Peas are a good crop to take on such ground, and second, that their richness in nitrogen ought to make it possible to do the animals sufficiently well with chat Potatos, poor Parsnips, Beet, and Artichokes from the garden. All these latter things are rich in starch or sugar, and if the pig cannot thrive on such a diet he is more difficult than a human being.

It is curious that no one has given advice at a time when, beside food cards, that is the only plentiful commodity—on the subject of Maize. The early-ripening kinds such as I am growing at Wisley last year should be a useful crop now that gardeners are going in for live stock. Raised under glass and pricked out, only varieties of Maize should do well in sunny districts, and the amount of "straw" which the plant produces should make it additionally valuable. Even for its industrial uses it might be tried, as I believe it makes an excellent paper of the better sort.

A fruit grower who attended the recent conference gave me a most interesting account of Mr Protheroe's speech, and among the many points to which he referred I was particularly struck by his reference to the multiplicity of forms of agricultural baskets. I myself have been unable to fathom the mysteries which he

FIG. 1.—A FLOWER-SPIKE OF LILIUM SPECIOSUM MAG-NIFICUM GROWN IN THE WOODLAND BEDBROOK (see p. 110)

behind the strike and sieve and half sieve and pot. On the chance of these lines meeting the watchful eyes I would suggest that the Royal Horticultural Society might confer a boon on everybody by holding an exhibition of agricultural baskets in connection with one of its fortnightly shows, each exhibit to be clearly labelled with its name, county of origin, and use. Perhaps such an exhibition would bring home to those engaged in distribution the possibility of reducing the number and even improving the type. I am told that cane baskets are to be put on the market this year, and it will be of interest to learn whether their "life" is less limited than that of the basket made of withies.

At the end of February I went through the north east wind to Wisley to see whether spring was at hand, and among the many signs of life's awakening which I saw was a plant of Daphne Mezereum, pure snow white with no trace of cream, nor sign of pushing leaf. It stood peer

among a group of [illegible] creamy-white and magenta flowers [illegible] them look dowdy; that, a plant of Iberis Wintergreen flowering in its pale blue [illegible] a cleft rock, and a batch of brilliant-stained Primula obconica, well repaid me for my visit. I returned to my Cabbages and Kale and my [illegible] goose steps with, as it were, the reassurance that we have only to be resolute in the practice of this present utility gardening for the sun of beauty to rise [illegible] bows to be sown again with green [illegible] borders to be bright again. [illegible] by the memory of those ancient [illegible] management." Only be strong [illegible] quit you like men," and [illegible] plant rampant Asters to make [illegible] Sunflower.—*A. N.*

USE FOR PEAT.

THE antiseptic power of [illegible] known. Last autumn, besides [illegible] broken peat (black, brick peat [illegible] fresh Heather and Fern peat [illegible] surface, sprinkling of peat was [illegible] under cloches; whether from this cause or some other the plants did not damp off. In replanting it was interesting to observe how the roots had seized upon and invaded bits of the peat, and the same fact was observed in the case of Erigeron.

The grave inconveniences of fermenting urine in open vessels for manurial purposes, as do the Chinese, led me to try to reinforce some peat. Two 12 inch pots were filled therewith, and alternately used as a garden urinal as they became saturated. They were started in July, and not used during the winter nor until May, when they were again casually used. A certain amount of stove and rain had caused the effluent to overflow the underlying saucers, so that some ammoniacal odour developed. On being allowed to dry out again under shelter one was again put to use for several months without smell or congregation of flies. In May a sample was taken and compared with the original (raw Heather peat):—

PERCENTAGES IN AIR DRIED MATERIAL.

	Original peat.	After 18 months.	Effluent ditto per 100 c.c.
Water loss at 110° C.	14·89	22·61	
Potash as K_2O	0·2	6·48	0·098
Phosphoric acid (P_2O_5)	0·084	1·4	0·062
Silica	8·42	54·7	—

It will be seen that the potash had been well retained, but was evidently being leached out, as also was occurring with the phosphoric acid, the quantity of effluent lost was not known.

On keeping, the effluent remains a dark coffee coloured fluid perfectly odour free, and in diluted state has been given to various plants, including Leeks, as also the now pulverised material as a top dressing. A later arrangement used all through last summer was to have two 12 inch pots superposed after filling them with the peat; still in use they stand odourless. The nitrogen content would be interesting, but one cannot do everything in these days. Food production is much dependent on manurial supply, and I venture to call attention to this apparently unobjectionable mode of utilising some otherwise waste material, so many millions of tons of which annually are devoted to the ocean. I notice that Dumont strongly advises the addition of all room sweepings (fluff, etc.) to the compost heap.

In the day to come when the much harassed battlefield area is [illegible] put under cultivation the need for humus will be admittedly of prime importance. Humus could probably be most satisfactorily supplied by heavy dressings of peat. Is it too much to hope that the extensive peat areas of Germany should be made to contribute to undo what Germans has done. I commend the idea to the various Foreign Offices.—*H. E. Durham.*

NEW OR NOTEWORTHY PLANTS.

JUBAEOPSIS CAFFRA.

SEEDS of Jubaeopsis caffra, a new and very interesting Palm, have lately been received at Kew from Pondoland. It is, according to Dr. Beccari, a member of the Cocos family, and a near ally of the Chilian Jubaea, therefore as much a stranger in Africa as a Phoenix would be if found wild in America. The species was discovered in 1909 by Mr. C. Ross in East Pondoland, but had never been introduced into cultivation. The leaves are pinnate and its broad-based, trigonous nuts are 1¼ inch in diameter, with the three vents or pores at the sides instead of the base. They differ from the nuts of Jubaea in being narrowed to a point at one end, Jubaea being pointed at both ends. Jubaea spectabilis, the Coquito Palm, is represented by a magnificent tree in the Temperate House, where it has grown happily for probably fifty years. In Chili the stems of this Palm are tapped for their delicious honey-like juice. There are probably many gallons of juice in the Kew tree. *W. W.*

TREES AND SHRUBS.

RHODODENDRON PRAECOX.

THE value of this Rhododendron for greenhouse decoration is referred to by Mr. Watson in "Notes from Kew," on p. 97. An interesting feature connected with its early history is that when shown at a meeting of the Royal Horticultural Society on March 12, 1861, it was only given a second class certificate, which is now an obsolete award. Strange as it may appear when viewed in the light of present-day events, a first class certificate was at the same meeting awarded to a variegated leaved form of Agathaea caelestis, a worthless thing. Still, it must be remembered that at that time variegated leaved plants were very popular. In proof of this it may be mentioned that at the International Horticultural Exhibition, 1866, a prize of £5 was offered for 50 hardy variegated alpine and herbaceous plants.

R. praecox was raised by the late Mr. Isaac Davies, of Ormskirk, to whom we are indebted for many other beautiful varieties of Rhododendron. The parents were the Himalayan R. ciliatum and the purple-flowered R. dahuricum. From R. ciliatum and R. virgatum was raised R. multiflorum, remarkable for its great profusion of pale blush flowers. Pixie Queen and Queen of Dwarfs are two others much in the same way, but dwarfer, and with pure white flowers.

A very desirable race of greenhouse varieties was obtained by the intercrossing of R. multiflorum and R. Edgeworthii, the latter being remarkable for its large, fragrant blossoms. R. Edgeworthii is of somewhat straggling habit, but in the progeny this is counterbalanced by the dwarf habit of R. multiflorum. The varieties of this group were Countess of Derby, Lady Skelmersdale, Countess of Sefton, and Mrs. James Shawe, all with large, deliciously scented blossoms, which are white or slightly tinted. Another interesting hybrid, R. Daviesii, was raised from R. retusum and R. javanicum. R. Daviesii was very pretty, but of somewhat ungainly growth. This is but a tithe of the varieties raised by Mr. Davies. *W. T.*

PRUNUS PISSARTII.

NEVER before do I remember Prunus Pissartii so beautiful as it is this season. The trees are a mass of bloom, and very effective, with the white petals set in a background of purplish tints. In previous seasons this tree has been one of the first to suffer from the depredations of the bullfinch, and these birds have always done their destructive work so well in destroying the flower-buds that I have never seen more than a dozen or so blooms on our trees before. *G. H. H. W.*

The Week's Work.

THE KITCHEN GARDEN.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

ASPARAGUS.—For the formation of new Asparagus beds the first week in April is quite soon enough to plant, where the soil is light, but on heavier soil planting may well be deferred to the end of that month. One or two-year-old plants may be transplanted with little injury to the roots, especially if they are home-grown. Where the nature of the ground and the position are favourable to growing Asparagus on the level, this proves a good method. On unfavourable ground, such as heavy clay, the ground should be trenched and enriched with plenty of manure, road scrapings, garden refuse and wood ashes, leaving the surface as rough as possible until the time for planting. On heavy soils it is desirable to plant on raised beds, about 1 foot above the ground level. The beds should be 4 feet in width, thus allowing room for three rows of plants; provide 2 feet alleys between the beds.

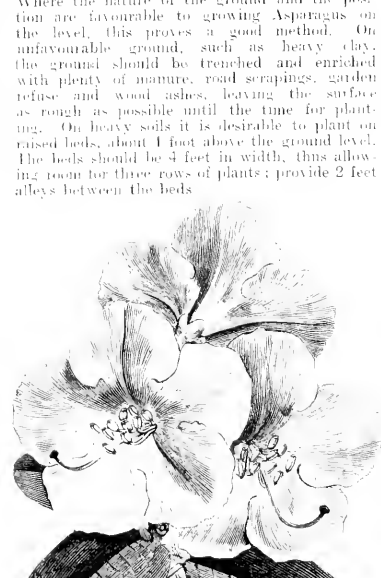

FIG. 52. RHODODENDRON PRAECOX.

POTATOS.—A few early varieties of Potatos may be planted in a sheltered position, such as the foot of a south wall in front of glass-houses. A large amount of soil is not necessary, but it should be light and rich.

SEED-SOWING.—Owing to the dull weather and moist atmosphere, heavy, clayey land is not yet sufficiently pulverised to be easily workable. To sow seeds of choice vegetables in cold, wet, and badly prepared ground is so much labour and expense wasted. It is better to delay seed sowing a fortnight or so; even a few days make a great difference in the state of the ground, especially in March. The seed should, however, be sown directly the soil is in a fit state to receive it. The following vegetables may all be sown outside on a south border or other warm position: Carrots Champion, Scarlet Horn, and Early Gem; Turnips Early Milan and Snowball; Cauliflowers Magnum Bonum, Forerunner, and Early Mammoth; Brussels Sprouts Dwarf Gem, Matchless, and Exhibition; Lettuces Cabbage and Cos; and Cabbages Earliest and Emperor. Marjoram and Basil should be sown in gentle heat for planting out afterwards. Gradus and Early Giant Peas may be sown to succeed those recommended in the Calendar of February 16.

EARLY BEET.—A small sowing of Beet may be made on a gentle hotbed or warm border, thinning the seedlings to 6 inches apart. Globe varieties are best for early supplies. Give air on all favourable occasions, and protect early sowings made in the open from frost and birds.

FRUITS UNDER GLASS.

By W. J. GUISE, Gardener to MRS. DEMPSTER, Keele Hall, Newcastle, Staffordshire.

THE CHERRY HOUSE.—One of the houses in these gardens devoted entirely to established Cherry trees presents a very beautiful sight, for the trees are in full flower. Standard, half-standard, dwarf fan-trained, and cordon trees appear to vie with each other in flowering. At this stage of development the valves of the hot-water pipes should be opened a little to maintain a dry, buoyant atmosphere, and the amount of ventilation increased to favour the setting of the fruits. This may also be assisted by pollinating the blossoms daily by the use of a rabbit's tail. Directly the fruit is set, should there be the least trace of aphis, fumigate the house. Keep a sharp watch for grubs that attack the foliage; they can generally be detected by observing the neatly folded leaves in which they hide. Hand picking must be resorted to, for if allowed to go unchecked the grub will destroy all the foliage and eat into every fruit. Fumigations or insecticides are useless against this pest. A night temperature of 45° with a rise of 10° by day will be warm enough for trees in flower.

THE ORCHARD HOUSE.—The mild weather had its effect on trees in late houses. It has caused the flower-buds of Apricots, Cherries, Peaches, Nectarines, and some of the earliest Pears, to burst, necessitating a little warmth in the hot-water pipes. In a house of this description shelves near the glass can be reserved for successional batches of Strawberries where they will receive the maximum amount of sunlight and air. Even at this period water must be given with great care until growth is more active, for it is as injurious for pot fruits, and even established trees in borders, to be over-watered at this stage as to suffer from drought. Watering should be done only in the forenoon; for several weeks yet, once a day will be sufficient. A constant circulation of air must be maintained, especially as the trees come into flower. Admit a little air at night through the top ventilators, except in frosty weather. Aphis must be kept in check by fumigating, followed by vigorous syringings of tepid water. The syringings must cease when the trees are in flower, as it is useless to attempt to pollinate flowers in a damp atmosphere.

FRUIT TREES IN POTS.—The earliest trees will now require water more often, with, occasionally, light stimulants. Concentrated fertilisers may either be used as weak solutions or scattered on the surface and watered in. Weak soot water, given every week or ten days, will improve the fruit and foliage. Syringe the trees with tepid water twice daily; in the morning when the temperature increases, and once again early in the afternoon, when the house is closed. The last syringing should be done in time for the foliage to get dry, or nearly so, before night. On bright, sunny days a higher temperature will do no harm, but top and bottom ventilation must be increased, and the fires kept to the lowest limits, as the sun gains power. A night temperature of 55°, or even a few degrees lower, will be ample warmth.

THE ORCHID HOUSES.

By J. COLLIER, Gardener to SIR JEREMIAH COLMAN, Bart., Gatton Park, Reigate.

RE-POTTING.—Many different species and hybrids are responding to the influence of the spring sunlight, and the development of new roots and top growth show that the resting season is over. No time should be lost in re-potting Angulua Cliftonii, A. Ruckeri, A. uniflora, and A. eburnea. After their long season of rest these Orchids are becoming active at the roots. They are strongly-rooted plants, and require a compost formed of equal parts fibrous loam, passed through a ½ inch sieve in order to remove all the small particles, and Osmunda or A 1 fibre, adding a little Sphagnum moss and crushed

crocks. Place sufficient crocks in the bottom of the pot to ensure effective drainage. Anguloas should be grown in a light position in the intermediate house, or in the lightest and warmest part of the Odontoglossum house. Coelogyne Massangeana, C. Dayana, C. Lowii, C. barbata, and C. Mooreana are making new growths, and the plants may be repotted. Orchid pans suspended from the roof rafters form the most suitable receptacles, with a rooting medium similar to that advised for Anguloas. The plants should be grown in the warmest position in the Cattleya house. C. pandurata is also making new growth, and plants that have overgrown their receptacles may be repotted. If any of these plants have sufficient rooting space for another season, but the soil has become sour or exhausted, it may be picked from between the roots by the aid of a pointed stick, all small particles washed from among the drainage, and new materials substituted. The new compost should consist of a mixture of equal parts good fibrous loam, A I fibre, and Sphagnum moss, the whole chopped rather small, and well mixed with crushed crocks. The plants should be grown in pans and suspended from the roof rafters in the warmest house. In the process of potting cut away the old back pseudo bulbs, leaving only two or three behind each healthy growth. Plenty of room is necessary in the pans, as the rhizomes will extend some inches each year. After being potted water should be applied sparingly until the plants have rooted freely in the new compost, after which they should receive liberal supplies until the new pseudo bulbs are completed. Plants of Bulbophyllum grandiflorum, B. Eriessonii, B. Reinwardtii, B. virescens, and others that have commenced root action should be afforded fresh rooting materials while there, including B. anceps, B. barbigerum, B. Lobbii, and B. saltatorium which are developing their flower scapes will be better to pot later on in the year. Those having a creeping habit are best grown in Teak wood baskets. Plants of this type that have overgrown their receptacles may, if the compost is still in good condition, have their roots and pseudo bulbs trained round and pegged down to the compost thus making the plants more shapely. Plants of more compact habit are best grown in shallow Orchid pans. Cirrhopetalum pulchrum, C. elegans, C. elegantissimum, C. Collettii, and C. ornatissimum are also showing root action, and should be dealt with in a similar manner. Many species of the genus Megaclinium are sending up their flower spikes, and their repotting should be deferred for the present. Catasetum macrocarpum, C. Cliftonii, and C. tabulare should be repotted, using a similar compost to that advised for Coelogyne pandurata.

THE HARDY FRUIT GARDEN.

By JAS. HUDSON, Head Gardener at Gunnersbury House, Acton, W.

STRAWBERRIES.—Take the earliest opportunity to lightly fork the soil of Strawberry plantations; and, if needed, apply a light dressing of well-decayed manure. I shall not apply manure to our plants just now, but intend to give them a very light dressing of Peruvian guano when the flower trusses appear. I do not favour the making of new plantations in the spring, but in cold and late districts spring planting may be a distinct success. A very successful cultivator of the British Queen variety recently informed me that the best system with growing this variety was to plant in rows at 6 inches from plant to plant, and at the ordinary distance between the rows. I hope to try this method as an experiment. Perhaps some others of the many readers of the *Gardeners' Chronicle* may have tried this method, and their experience would be valuable. I do not advise the planting out of the earliest forced Strawberries from pots. Rather wait a month, when the weather will be more genial.

ALPINE STRAWBERRIES. In my remarks on p. 55 I drew attention to the value of Alpine Strawberries, and recommended that the plants be raised from seed. I have to-day made an examination of the plants in these gardens that were set out in October last, and I could not detect a failure. The soil will be first trodden firmly and then kept hoed as required. By planting runners in the early spring it is possible, however, to gain a little time over plants raised from seed sown at the same period. The runners may now be planted, three in a group, allowing a space of about 18 inches from group to group, and the same distance between the rows. If the runners receive careful attention for the next few months, and all flower trusses and off sets are removed until the first week in July, a fair crop may be expected in the autumn, mainly during the latter half of August and through September. These spring-planted runners will not, however, be so good as the seedlings planted out last autumn. Well-decayed leaf mould is one of the best manures for Alpine Strawberries, and is preferable to farmyard or stable manure. Next to the leaf mould I would advise the use of manure from a spent Mushroom-bed. Plantations that were made last autumn may soon receive a light dressing of lime, repeating the application at a later date to keep slugs in check, and otherwise assist growth.

THE BLOSSOMING PERIOD.—The cold weather has retarded the flowering of fruit trees, which is an advantage, for the buds were developing too fast. The fruit-buds of Apricots are being retarded, and so are those of both Peaches and Nectarines. Plums in the open and Damsons are showing well for fruiting. With Pears and Apples the show is but partial; some kinds look promising: of Pears, Clapp's Favourite is very good, and so is Bismarck amongst Apples. Our trees of this Apple have not failed to furnish a crop for twenty years past; it is the earliest variety at Gunnersbury to flower, but the tree never fails to set a good crop. So far I have not, in consequence of the cold weather, fixed up the netting on the fruit walls. This should not be done before the flowers are just on the point of expanding.

PLANTS UNDER GLASS.

By E. BECKETT, Gardener to LADY WANTAGE, Lockinge Park, Berkshire.

EUPHORBIA PULCHERRIMA (POINSETTIA).—A start should be made with the propagation of this plant before the weather gets too warm; the bulk of the stock should be rooted before the end of April, as, after that time, the cuttings do not root readily. The old plants may be placed in a warmth and moisture to make suitable growth for cuttings. When the shoots are 2 or 3 inches long strip the plants into a cooler house for a few days before taking off the cuttings. The shoots will root better after this treatment, as the cuttings will not be so liable to flag. Take the shoots off with a heel and insert them in small pots filled with fine sand. Plunge the pots in a hot bed in a propagating case and shade them from sunshine until they have rooted.

BEGONIA GLOIRE DE SCEAUX.—Extreme care is needed to cultivate Begonia Gloire de Sceaux to perfection. A check to growth, especially during the later stages, will be almost sure to cause an attack of the leaf disease, to which this plant is subject. When the plants have finished flowering they should be slightly cut back and placed in a house having a warm, moist atmosphere, to produce shoots for cuttings. When the shoots are large enough, insert them singly in thumb pots filled with light, sandy soil, and plunge the pots in a hot bed in a propagating case. From the time the cuttings are rooted they should grow steadily in a genial atmosphere, syringe them with tepid rain water twice daily and shade them in bright, sunny weather. A compost consisting of fibrous loam, peat, decayed leaf mould, old lime rubble, and sharp sand in suitable proportions forms a suitable rooting medium. Much care is necessary in affording water at the roots, especially when the plants have been recently repotted. When they commence to open their flowers, a cooler and drier atmosphere will be necessary.

SCHIZANTHUS AND CLARKIA.—Some of the earliest of these useful annuals are coming into flower, and, as the pots are full of roots, plenty of stimulants should be used. Attend to the staking of later plants; Clarkias especially must be carefully attended to in this matter. Grow the plants in cool conditions, using fire-heat only in times of severe frost. Lightly fumigate the house containing annuals in pots at regular intervals to destroy aphis. Another sowing of Mignonette may be made in 3-inch pots.

STATICE SUWOROWII.—This is an easily grown plant, and is useful for furnishing the greenhouse or conservatory during the summer months. It may be raised from seeds sown now in boxes or pans in a light, sandy compost. When the seedlings are large enough to handle, pot them singly into 3-inch pots and keep them growing slowly near the glass in a cool house. Shift them when ready into 5-inch or 6-inch pots, using a compost of loam, leaf soil, manure from an old Mushroom-bed, and sharp sand.

POT ROSES. Roses which have finished flowering should be placed out-of-doors to make room for later batches. For the present they can be placed closely together in a sheltered position. They must receive regular attention in regard to watering, and stimulants must be given about once a week. Syringe the foliage occasionally with a mixture of soft soap and sulphur to keep it free from mildew and aphis. When all danger of severe frost is over, the pots should be plunged in ashes in an open situation.

CLIMBING ROSES.—When the trees have finished flowering, the old flowering wood must be cut hard back to encourage the growth of young shoots, which will be required for next season's flowering. Only sufficient of these shoots to cover the trellis should be retained, trained about one foot apart. Plenty of water must be afforded while the trees are in active growth, and this should be supplemented occasionally with diluted liquid manure. It is necessary that the foliage be kept free from mildew and insect pests, and during warm weather the trees should be sprayed with rain water each afternoon.

THE FLOWER GARDEN.

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

HONEYSUCKLES. Varieties of Lonicera Periclymenum will now require pruning. Those growing on arches should be cut hard back with a pair of shears; if necessary, save some of the longer shoots to replace outworn ones. The late-flowering Dutch Honeysuckle, if filling the space allotted to it, should have all the growths pruned hard back, which induces the production of a limited number of vigorous growths instead of quantities of weakly ones. When in good condition, these yield enormous racemes of flowers, which require attention to keep them fastened securely to the supports. The Trumpet Honeysuckle may also be pruned now. Should Lonicera Standishii have finished flowering, this, too, may be closely cut, but it does well in bush form without very much pruning.

ROSES.—Winter mulchings should be removed forthwith from Roses, and pruning commenced, to be followed by lightly forking the surface soil. Where other plants are grown with Roses a charming effect is produced by masses of Fellenberg and Hermosa, carpeted with Nepeta Mussini planted very close. Every alternate plant should be cut in June, so as to continue the effect when those uncut have finished flowering.

TUBEROUS BEGONIAS.—The tubers should be removed from their winter quarters, and placed in heaps in a late vinery or other suitable place, where they can be kept moist without being often watered. Mats or canvas sheets spread over them help to keep them moist, and induce simultaneous growth in all the tubers. Usually it is the best plan to box up the tubers after roots appear with the shoots. A suitable compost is one of half loam and half rough leaf-mould. Do not quite cover the tubers with soil for a week or two, but after this they should be completely covered. One good soaking of water will suffice the plants for several days, especially if shading is used. They should not be kept too long in a glass structure; as soon as it is safe to transfer them to a cold frame, this should be done. There is no need to try to hurry growth, as it progresses very rapidly during the latter weeks of May. Large tubers with several shoots should be divided before planting them in boxes. Labour may be saved by planting tubers in April similarly to Potatos, but the plants will flower rather late in the season.

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APPOINTMENTS FOR MARCH.

THURSDAY, MARCH 21—
Manchester and N. of England Orchid. Soc. meet

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 41.9.

ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, *Thursday*, March 14: 10 a.m.: Bar. 30.1; temp. 49.5°. Weather—Fine.

The Manufacture of Nitrogen Compounds by Plants.

It is curious how little is known with certainty of the chemical processes—among the most important which occur in Nature—which enable the living plant to build up organic nitrogen compounds from the nitrogen contained in the inorganic nitrates which the plant absorbs from the soil. The question has, of course, been the subject of endless speculation, and of much experimentation, but no one has yet been able to trace to the general satisfaction of men of science the sequence of chemical processes whereby nitrogen brought into the plant in the relatively simple form of nitrates is promoted to become an integral part of the complex organic nitrogen compounds—the proteins—on which the life of the living organism depends. The most recent observations* throw some light on this obscure subject. Professor Moore, who is responsible for these observations, claims that dilute solutions of nitrates exposed to sunlight undergo conversion into nitrites. This chemical change—from nitrate to nitrite—involves an uptake of energy, and the source of the energy employed in the operation is sunlight. Further, according to Professor Moore, if green leaves are immersed in the solution of nitrates exposed to sunlight, nitrites do not accumulate in the solution, and from this fact he concludes that the nitrates are absorbed by the leaves. Professor Moore infers from these observations that in the normal life of the plant the nitrates absorbed by the root pass into the leaves and are there, by the agency of sunlight, converted into nitrites. He concludes that the first stage of synthesis of organic nitrogen compounds is carried out by the green leaf aided by sunlight.

Incidentally, the author states that no ozone occurs in the air at surface level, and that the odour of fresh air is probably caused by nitrogen trioxide, which, he believes, is formed by the action of sunlight, rich in ultra-violet rays, on air and aqueous vapour in the upper regions of the atmosphere. He suggests that rain brings down the combined nitrogen in the form of nitrates, and thus makes a contribution to the fertility of the soil. This hypothesis has often been put forward, and two or three decades ago it was commonly held that an important source from which soil nitrogen compounds are obtained is the nitrogen of the air. The discovery of nitrogen fixation by the nodule organisms of leguminous plants, and by certain soil bacteria, helped to divert attention from this possible source of supply of combined nitrogen, and it is therefore interesting to note that on the basis of Professor Moore's recent observations these old ideas appear to be in course of rehabilitation.

* "The Formation of Nitrites from Nitrates in Aqueous Solution by the Action of Sunlight and the Assimilation of the Nitrates by Green Leaves in Sunlight." By Prof. B. Moore. A paper read before the Royal Society, Dec. 13, 1917.

ROYAL VISIT TO READING.—In the course of the visit of the KING and QUEEN to Reading on Tuesday last, they inspected the establishment of Messrs. SUTTON AND SONS, and were exceedingly interested in the various processes connected with this vast seed business. Their Majesties were particularly impressed by the preparations being made for executing a large order for flower seeds from the Director of Registration of the graves of soldiers in France for beautifying the military cemeteries, a work in which the Prince of WALES takes the keenest interest. Both the KING and QUEEN expressed themselves delighted with everything they saw, and especially with the efficient work being done to increase the amount of food grown in this country.

THE GROWTH OF TREES.—Measurements made by Mr. A. MALLOCK, F.R.S. and reported at a recent meeting of the Royal Society, show that trees exhibit a well marked daily periodicity of variation in girth, with a maximum at night and a minimum soon after noon.

CUNAO OR CHINESE GAMBIER. The dye known as Chinese Gambier is the product of crushing and soaking the root of a plant known by the Chinese as "Cunao," and drawing off and concentrating the liquor therefrom. According to a report by the United States Consul-General in Hong Kong, remarks the *Journal of the Society of Arts*, there are two qualities of the product reaching the Hong-Kong market from Canton and other ports, one of which is the product of Kwangsi and Yunnan Provinces, coming largely from Lungchow and Luk Po in Kwangsi, and from Mengtse and Yunnan fu in Yunnan Province. The other quality is the product of Indo-China and certain other parts of Yunnan Province. Usually the Indo-Chinese product is employed for the first dyeing of a cloth or for the coarser work in other materials, while the Chinese product is used for the second or finishing dye, because of the deep, rich brown gloss it gives cloth.

ARSENIC AS A STIMULANT OF NITROGEN FIXING BACTERIA.—Experiments carried out by J. E. GREAVES, of the Utah Agricultural Experiment Station,* show that arsenic, particularly in the form of lead arsenate, has a marked effect in stimulating ammonifying and nitrifying soil bacteria.

* *Journ. of Agric. Research*, VI., 2; see also *Agric. News*, Jan. 26, 1918.

ROYAL SOCIETY FOR THE PROTECTION OF BIRDS.—The annual report of the Royal Society for the Protection of Birds constitutes a most interesting record of useful work. The report comments unfavourably on the ill-advised action taken by public bodies during the year in encouraging and even remunerating the wholesale slaughter of birds, many of them of the utmost value to the farmer and gardener, and especially condemns the formation of so-called "sparrow" clubs. The fact is also mentioned that owing to the scarcity of insectivorous birds consequent on their destruction, there was last summer a plague of caterpillars and other pests in many parts of the country, which destroyed great quantities of valuable food.

GLASS JARS FOR PRESERVING.—All who have not already obtained a sufficient stock of glass jars for preserving fruit and vegetables during the coming season are advised to place their orders with local retailers without delay. If the orders are deferred the jars may be difficult to obtain, and the prices which will have to be paid may be higher than they are at present. Glass jars with screw tops and rubber rings can be obtained from most makers at the following maximum prices:—5s. 9d. per dozen for 2-lb. jars in not fewer than 20 gross lots when purchased co-operatively by societies, and when the purchasing society accepts delivery at the railway station and undertakes distribution; 6s. 3d. per dozen for 2-lb. jars in not fewer than 20 gross lots when distribution is undertaken by the retailer to the members of the society or organisation placing the order. For small quantities the maximum prices per dozen are:—6s. 6d. per dozen for 1-lb. jars; 7s. 6d. per dozen for 2-lb. jars; 10s. per dozen for 3-lb. jars; 11s. 6d. per dozen for 4-lb. jars. These prices may not apply to orders placed after March 31, inasmuch as after that date makers may find themselves obliged to increase the prices. There remains another two weeks therefore in which purchasers may be certain of obtaining glass jars at the above rates. Another advantage in placing orders at once is that delivery in time for use in the early part of the season should be secured.

CO-OPERATIVE BASKET MAKING.—The Food Production Department has established a co-operative basket-making society to supplement the short supplies of agricultural baskets for market work.

BRITISH FLAX.—The President of the Board of Trade has appointed a Committee to investigate the question of increasing the supply of flax in the British Empire. The Chairman of the Committee is Lord COLWYN (formerly Sir FREDERICK HENRY SMITH, Bt.), and the Vice-Chairman Sir FRANK WARNER, K.B.E. (President of the Silk Association). The address of the Committee is Gwydyr House, Whitehall, S.W. 1.

CONTROLLED PRICES OF ONIONS.—The Ministry of Food has fixed the following prices for home-grown Onions (f.o.r. or f.o.b. to growers):—Early autumn (up to Nov. 1), £15 t.o.r., f.o.b.; late autumn (Nov. 1 to Jan. 1), £16 10s. f.o.r., f.o.b.; winter and spring (after Jan. 1), £18 f.o.r., f.o.b., provided that growers can make the necessary arrangements in time.

SUPERFLUOUS WOOD IN FRUIT TREES.—Mr. C. MARTIN, County Horticultural Instructor in the Isle of Wight, advocates* the systematic compression of the wood of unfruitful trees making too much growth in order to force them into a fertile condition. He has devised a simple form of band bolted either on one or both sides by a screw, which can be tightened at will. Mr. MARTIN recommends that the smooth band should be put in place when the

* *Superfluous Wood in Fruit and other Trees.*

sap is down, and holds that this method will do away with the labour of root-pruning. The "throttle" has the advantage that by a turn of the screws the pressure can be increased or released.

GOVERNMENT CONTROL OF POTATOES.—Important announcements were made by Major E. A. BELCHER, Director of Vegetable Supplies, Ministry of Food, at the annual meeting of the National Federation of Fruit and Potato Trades Associations on the 12th inst. The outstanding points of his address were: There are only sufficient stocks of Potatoes to see us through the present season; Compulsory use of Potatoes in bread is to be left to local option; Loss consequent upon restriction of market areas is to be made up to growers of 1917 crop. Minimum price for 1918 crop is to be £5 15s. a ton. Factories are being established to manufacture by-products from any surplus, or any Potatoes unfit for human food of the 1917 or later crops.

PRISONERS OF WAR IN AGRICULTURE.—Nearly 9,000 prisoners of war are employed on the land in England and Wales.

LAND WOMEN'S WAGES.—The minimum wage for women enrolled in the Land Army has been increased from 16s. to 20s. per week, and for those who have passed their efficiency test 22s. is now the minimum. Efficiency tests are being held weekly in Monmouth, and will be so held until all the women land workers have been officially tested. Owing to the increased number of recruits new training centres for women have been opened in Cambridgeshire and Hertfordshire.

THE HUNGARIAN FRUIT TRADE. We learn from the *Board of Trade Journal* that the Hungarian Government has established a Central Vegetable and Fruit Company to control trade in vegetables and fruit. The whole country complains of the shortage of those commodities and of the bad condition in which they arrive at the market. The Central Company recently proposed to overcome this evil by taking control of the whole trade. This plan has been opposed by dealers and producers to combine and form the National Company of Hungarian Vegetable and Fruit Producers and Dealers (Limited) ("Frugal"), with a share capital of 1,000,000 kronen, subscribed by 341 producers and dealers as well as by the Agricultural and Commercial Society, the "Agricola," which itself represents 50,000 producers. The new company will, in agreement with the Hungarian National Food Office, negotiate the export of surplus Hungarian fruit and vegetables, especially to Austria.

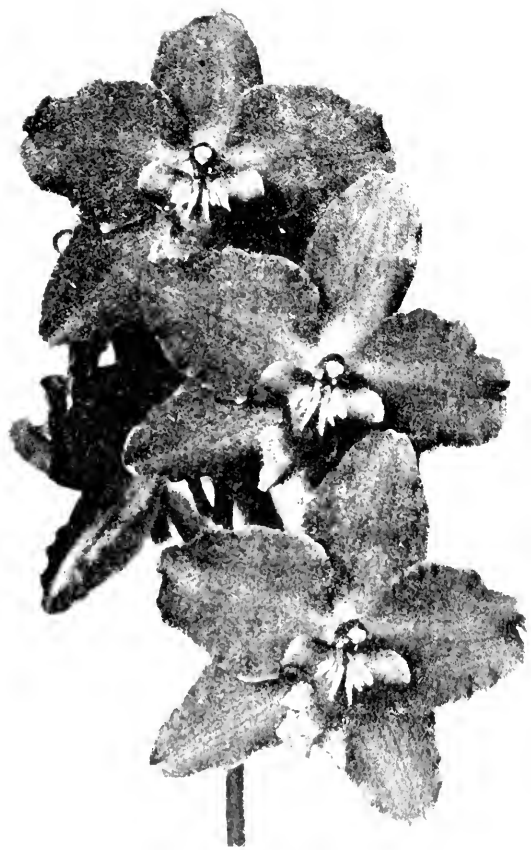
NETTLE-FIBRE.—According to the *Journal of the Royal Society of Arts*, the prospects of the Nettle-fibre industry are none too bright. First it is necessary to obtain the Nettles and plant them out singly, and both the cutting and harvesting require labour at the same time as the more valuable crops. When harvested there is a yield from wild Nettles of 4 cwt. to 6 and from cultivated Nettles of up to 50 per cent. of bast fibre. The fibre is prepared, according to a Vienna method, by first stripping and then roasting the stems, when a fibre suitable for cordage and pile spinning is recovered. Upon a Danish system the Nettles are cut and stacked for the winter, then tops and leaves are removed and retting is done either in a pond or in four days' immersion in hot water. The stalks are dried, broken, scutched and hackled by a system of cordage and carding fibre has been obtained. All textile fibres in course of use are subject from the battlefield and have been under examination in British laboratories. Nettle-fibre sandbags and cap and coat linings have been identified.

PUBLICATIONS RECEIVED.—*The Garden from January to December.* By R. S. BROWN. (London: Morton & Burt, Ltd.) Price 6d.

FRUIT TREE SPRAYING.

GROWERS of fruit trees who have not yet done their winter spraying should [illegible] matter at once, before the buds [illegible] become active. Fruit trees, as a rule, in parts of the country, remain dormant [illegible] the end of March. Apple, Pear, Plum, Cherry trees and bushes need not [illegible] by being winter sprayed, although it is clearly understood that damage may be done spraying with winter washes if the work is delayed until the buds begin to burst. Trees [illegible] are covered with moss and lichen should be [illegible] Strain through sacking, but [illegible] covering [illegible] Cover the [illegible] side of [illegible] that a thin coating [illegible] It is best to make the [illegible] ds are just beginning [illegible] ney to the outer leaves [illegible] s are permanent damage [illegible] t that this wash is to [illegible] ng the insects from hatching [illegible] also the numbers of [illegible] e earlier.

Knapsack Sprayers. Many [illegible] applying these washes, but care [illegible] all the valves and internal



[illegible] (See page 118.)

sprayed with a caustic soda wash. Dissolve [illegible] caustic soda [illegible] of water, then add [illegible] of caustic soda paste. To [illegible] per cent. of a small quantity of water and add the caustic soda solution made up to 10 gallons. Stir all the time through dissolved and the paste has dissolved [illegible] the caustic action.

Boiling water should be [illegible] and to every gallon of water [illegible] caustic soda [illegible] per cent. solution is desired. For this purpose [illegible] lime must be employed. The lime must [illegible] and slaked. For treating 10 trees [illegible] 10 to 15 lbs. of lime by adding just as much water as the lime will take up. When the lime is broken down to a fine powder add water up to 10 gallons of the mixture thoroughly after use. To [illegible] Knapsack. Machine from the clogging effects of lime-wash, a coarse garden syringe may be used, though it is more difficult to apply the wash evenly and thoroughly by this means.

The large number of eggs which are to be found on fruit trees at the present time indicate that there are [illegible] a bad attack of caterpillars similar to that which took place last year. The trees, therefore, should be carefully examined with a pocket-lens, each [illegible] and if eggs are found [illegible] needles and the attack [illegible] develop. Every care should be taken to preserve the fruit crop from [illegible] spraying is one of the best means of preventing loss from disease and insect pests.

ON INCREASED FOOD PRODUCTION.

WINTER GREENS ON NEWLY TURNED-UP PASTURE LAND.

LARGE quantities of Brassicas were grown at Aldenham during the past season on newly broken up rough pasture, with splendid results in every case. The illustration in fig. 54 shows breadths of Sprouting Broccoli and Scotch Kale; Autumn Giant Cauliflowers with Colewort Cabbages were grown between the Broccoli and Kales, the Cabbages and Cauliflowers being now cleared. *Edwin Beckett, Aldenham House Garden, Elstree, Herts.*

ONIONS.

OWING to the reduction of imports it is necessary to increase the crop of home-grown Onions, and it is important that the greatest economy should be practised in the use of seed. Experienced growers who cultivate Onions by transplanting are aware that this method has many advantages over sowing. It economises seed (1½ lbs. of seed will suffice to raise the plants for planting one acre, as against 5·7 lbs required for sowing one acre). Transplanted plants also produce a bigger crop, and are less liable to be attacked by the Onion fly. The extra labour required for transplanting is set off by the smaller amount of weeding which is required.

Seedlings raised in beds or boxes in houses or frames in a minimum temperature of 40° and maximum of 55° require to be transplanted into boxes or frames before planting them in the open. Sowings in houses or frames may be made until the middle of March; in the case of later sowings it is not necessary to shift the plants into boxes or frames.

Air should be given whenever weather conditions are suitable. The seedlings should be well hardened off towards the end of March preparatory to planting in April.

Plant at 4 inches apart in rows, which should be made 1 foot apart (or more if horse cultivation is to be practised), and in planting take care that the plants are not put too deeply in the soil, which should be pressed firmly about the roots.

CELERY ALDENHAM PINK.

GROWERS of early Celery, whether for market or home use, should give this variety a trial. From a sowing made at the end of February, good heads will be ready for use early in October. My method of cultivation is as follows:—The seed is sown very thinly in shallow boxes, and germinated in a temperature of about 45°. A hot-bed is prepared, chiefly of leaves, and 4 inches of good sandy soil placed on the top. From the seed boxes the seedlings are pricked out 4 inches apart on the hot-bed. The frame is kept closed and well protected at night. As the days lengthen and the sun has more power, a little ventilation is given, but the frames are closed early in the afternoon and covered just before dusk. From this stage the plants are freely ventilated; a little later the lights are drawn back in the day and replaced at night. Celery must not be allowed to suffer from lack of moisture at the roots. Dustings of soot should be applied when the foliage is damp, to ward off attacks of Celery fly. Many growers imagine that Celery must be grown in trenches, but much of the Celery exhibited at shows is grown on the surface, and with half the labour expended on Celery grown in trenches. Trenches are opened 4 feet apart, 18 inches deep, and 12 inches wide. These are filled with half decayed horse manure, which is trodden down, and the soil again levelled. Early in May the plants are taken up with a good ball of soil, planted 1 foot apart in the trenches filled with manure, made firm at the roots and watered. Water must be given the roots freely, also weak liquid manure. Blanching is done by means of brown paper bands 6 inches wide; the first band placed around the base when the plants are about 8 to 10 inches high, and tied with three broad bands of Raffia. Further bands are required as the plants develop, and it is advisable, when putting on extra bands, to remove the ones put on previously, to permit of examining the plants. *C. Davis, Holy Wells Park Gardens, Ipswich.*

FIG. 54. WINTER GREENS PLANTED IN OLD PASTURE LAND.

CARROTS AND EARLY POTATOS.

A LARGE batch of Carrots was lifted in these gardens on January 24. The roots were in excellent condition, thus disproving the idea held by some gardeners that it is detrimental to the well-being of Carrots to leave them for so long in the ground. This particular sowing was made in ground of a somewhat heavy texture. The crop of another smaller sowing is still in the ground on the outskirts of a vine border, where the soil is lighter and somewhat raised above the surrounding level. This lot will come in after the store Carrots are finished, and before the spring sown batch is ready. The seed was sown on July 31, and the roots vary in size from the thickness of a lead pencil to that of a man's thumb.

Some venturesome enthusiasts at Moulden, in this county, planted a few Potatos the first week in February. Another grower in the same village planted a bushel of seed Potatos at the end of the second week of that month. Admitting how wonderfully early the sandy soil of Moulden gets warm, it can scarcely be more than once in a hundred seasons that such planting can prove successful. Early February is too soon for setting Potatos out of doors, no matter what the soil and position, unless it be in a garden in the extreme south. Radishes were sown at the same time between the rows of Potatos here alluded to, as an extra crop, and the whole surface was covered with straw litter. *C. T., Ampthill Park Gardens, Bedfordshire.*

FEEDING PIGS FROM SMALL GARDENS.

OF the two adjuncts to the home supply of food, mentioned on p. 68, I would prefer pigs to poultry. The pig will eat any waste refuse, within reason, from the household and garden. In towns and populous neighbourhoods the keeping of pigs is forbidden on account of the smell arising from dirty and badly kept sties; but the piggery can, and should, be kept as clean as a fowl-house. A pig, or several, could be kept in a small wooden house, the bottom of which should be boarded to prevent the animals from grubbing up the floor; a small square run outside the house is all that is necessary. Fowls are always troublesome, unless they are allowed to run at large, or have a good-sized run. They require more dry and hard food than pigs, which means corn or seeds of some kind. One can always calculate upon feeding a pig to a given size, but fowls will not always lay unless their special requirements are attended to at different seasons. Pigs fatten best and most quickly when confined within the limits of their sty and small run. For these reasons one or two pigs would be more easy to accommodate in the neighbourhood of a gardener's house, that of the tenant of a country house, or an allotment holder's residence, in districts where pig-keeping is allowed, than it would be to keep poultry in sufficient numbers to be of appreciable benefit to the household.

From the garden the pigs could be fed with Potato chats, Turnips, Swedes, Kohl Rabi, Beets, Mangolds, and the parings of Potatos and Turnips during winter. All these vegetables should be boiled and given to the pigs warm. In addition to the above there would be a considerable variety of waste scraps from the household. All the above would be available during some part of summer, when a considerable amount of green food could be given in the raw state, including Cabbage, Turnip, and other leaves of the Brassica tribe; also Beet, Clover, Lucerne, Vetches, and fresh, green grass.

In districts where Oats and Barley are the staple products of the farm, meal seeds, Barley dust, and even Barley meal, are available. Barley dust is the waste product in the shelling of pot Barley, and where Pearl Barley is made the dust is much richer, because it includes a portion of the meal. The latter is used as human food, in the shape of Barley bread and Barley meal porridge, but it is also used for feeding or fattening pigs. If a well-bred pig gets fairly good food for five months, and is then given Barley meal almost exclusively, it will give 120 lb. of the finest pork, especially if whey, buttermilk, and sour milk are added to the food when available.

Where Wheat and Mangolds form the staple products, sharps or middlings (the rougher parts of the grain of Wheat) are available as a supplementary food to the products of the garden; also brewers' grains, Peas, Oats, and Maize.

Nothing gives finer pork than the waste products of milk in the making of butter and cheese. These and skim milk should be used most freely just after the pigs are weaned at the age of six to eight weeks. In the way of utensils a copper, or merely a large metal pot, would be necessary to boil the requisite food. The animals require frequent feeding, but no more food should be given at one time than they can consume completely. *J. F.*

BEANS AND PEAS.

In addition to re-cropping the spaces occupied by first and second early Potatos, something may be obtained from the space occupied by maincrop and late varieties. Nothing is gained by planting these closer than 2½ feet between the rows and 1 foot between the tubers, and if every sixth or eighth row is missed the spaces may be filled by Haricot or Runner Beans or Peas, leaving the Bean crop to be harvested for winter use. Last season we secured an appreciable extra crop by planting one Broad Bean every 2 or 3 feet in the rows of late Potatos.

We failed last season to grow Haricot and Butter Beans from seeds obtained at the grocers. The seed was germinated under glass, and the seedlings planted out in the third week in May. The plants did not come into flower until September; they were grown alongside ordinary Runner Beans, which yielded a good and abundant supply of pods until the plants were cut down by frost in October. *J. E.*

DEGENERATION OF POTATOS see p. 120

I HAVE it on indisputable authority that deterioration concerned various skilful growers in Devon prior to the "terrible year 1845," and that these men took what seemed to them the best means to combat the evil. Their method was chiefly selection and careful treatment of sets; frequent change of sets was, in those days, rarely, if ever, practised. When the crop showed signs of ripening these men singled out all the plants which were greener and more vigorous than their fellows, marking each with a stick. At digging time these selected plants were carefully scrutinised, and if the yield was satisfactory all the tubers, except the chats and very large ones, were saved. They were laid out to green before being stored for the winter. Only the largest of these seed Potatos were cut before being planted, for cutting was not considered desirable. As is now held in some parts of Scotland, it was believed to induce glassiness and soapiness, so that sets larger than the present regulation size were planted, but at greater distances. In this respect there was no fixed distance except between the rows; the amount of space allowed each set depended on its size—a sound, common-sense method. By this plan, although home grown sets were used, a variety retained its vigour and productiveness for a long time.

Considerably later, in 1880, in the report of the House of Commons Committee which dealt with the deterioration of the Potato, more particularly with regard to its resistance to the disease, then called Peronospora infestans, it is stated that all the witnesses concurred in the necessity for the production of new varieties, as all Potatos had deteriorated in their disease-resisting powers. The late Director of Kew (then Mr. Thistleton Dyer, Assistant Director), one of the witnesses before the Committee, wrote a little later: "I do not doubt the possibility (not necessarily practicability) of eventually getting disease-resisting kinds," and went on to say that he felt that too much stress was laid on the consequences of deterioration. The principal cause of the mischief was, as with so many other cultivated plants, that we grew in great masses species that in nature are scattered about in different habitations. "We grow the Potato in large areas. Nature does not; we put our eggs, at any rate large parcels of them, into one basket. Nature knows better." And that last sentence, I have no doubt, largely explains the great susceptibility of our Potatos to late blight disease. Sir William Thistleton-Dyer showed great prescience in questioning the practicability of raising disease-resisting varieties, for the continued and careful Irish experiments have, so far at any rate, shown that the "disease-resisters" are either poor croppers or of poor quality, so that unless we can grow our Potatos more nearly after Nature's plan—and that is not practicable except for those who grow relatively small quantities for home consumption—we must resort to timely spraying as a preventive of disease.

But so far as the deterioration of the Potato in regard to its vigour and cropping powers is concerned, this can be remedied if more care is exercised in the selection and sprouting of the sets. The stocks in the hands of the reputable traders are right. It is the character of the seed Potatos sold by many greengrocers and ironmongers that is wrong. Too often these are merely small Potatos riddled from the ware late in the winter and palmed off, relatively cheaply, on an unsuspecting and unavoidably ignorant public as suitable for planting. Fortunately, many of the local authorities, realising this, have sternly refused to grant seed Potato licences to these tradespeople unless they show that the sale of proper sets has been a recognised part of their business. This is a move in the right direction. A further step would be for the seedsman to educate the greatly increasing Potato-growing public to the undoubted fact that just as it is necessary to deal with reputable firms and to pay a fair price to be sure of reliable seeds—seeds that will grow, and that are true to name—so it is essential to make sure of reliable Potato sets. But one may scan the advertisement pages of the horticultural journal for such an announcement in vain. The golden opportunity is allowed to pass.

My experience with cheap seed Potatos may be of interest. In 1916 I obtained possession of land late in the spring when good sets were unobtainable, so perforce I bought a quantity, cheaply enough, so far as price goes, which, as I well anticipated, proved to be merely smalls riddled from ware. They were mouldy, and the sprouts had been rubbed off, but it was a case of planting these or none, and there was no time to attempt to sprout them. As was only to be expected, there were many blanks, and the crop was to quote your fruit crops reports, "under." The crop was clamped when dry, till towards the end of December, when the ware was sold, leaving the small tubers. At that time I had bought "once grown" Lincolnshire sets for the next year's planting, but in view of the shortage I decided to increase the area of Potatos. As I found that by then the price of reliable sets was almost prohibitive, I decided to use the best of the small tubers as sets, and to carefully watch results. Early in January sufficient sets were boxed and placed under glass to sprout, and by the end of March most of them had made good shoots, and all were greened. In due course they were planted, and from these home-grown sets I had almost three times the yield of the previous year, though decidedly below that from the Lincolnshire "once-grown" sets, which gave a bumper crop. This tends to show that our stocks are right, but that our cultivation is wrong when we take Potatos from the clamp and plant them without proper preparation in greening and sprouting. *C. Bartlett.*

LIME AS A SOIL DRESSING.

A DRESSING of lime will in many instances increase and add to the value of vegetable crops. It is not too late to apply a dressing of 1 to 5 cwt. of lime per acre, and any soil which is sour from an excess of manure, too much water, or other cause, will give a greater and better return for such treatment. Lime is in itself a plant food, and its presence in soils is doubly valuable on account of setting free other plant foods, and especially in liberating the potash in clay land. *J. E.*

HOME CORRESPONDENCE.

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

UNDESIRABLE APPLES.—I am pleased to find that my suggestion to reduce the number of varieties of Apples meets with support. I was doubtful at first about eliminating King of the Pippins, but knowing how prone the tree is to canker and how poor the quality is in some districts, I decided to include it in my condemned list. This variety is in season with Blenheim Pippin and Cox's Orange Pippin, and, being inferior to both in quality, was another reason for discarding it. Bess Pool has no particular merit in flavour; high colour is its great asset. Mank's Codlin is too small; besides, we have Keswick Codlin, Grenadier, Lord Grosvenor, Lord Suffield, and, above all, the newer Rev. W. Wilks, which will cut out several other sorts when its wonderful cropping qualities become better known. Any one of those mentioned are superior to Mank's Codlin in every respect. I retained New Hawthornden in the place of the older variety as the latter is too prone to scab and other diseases. My experience in the North of England is that Lord Suffield is far superior to Domino. Duchess's Favourite is too small and is in season with others that are superior to it. Doubtless there are many other sorts not required. In all cases where new plantations of Apples are made, numbers of one or more well-tried sorts, such as Bramley's Seedling, Newton Wonder, Nortolk Beauty, Cox's Orange Pippin, and James Grieve, should be included in the selection. *E. Molyneux, Swanmore Park Farm, Bishop's Waltham.*

Mr. E. Molyneux has rendered a public service in drawing attention to the large number of undesirable Apples which are so freely grown. Considering the wealth of reliable varieties, both of culinary and dessert Apples, it is surprising that valuable space should be allotted to sorts that have no special merit. Mr. Molyneux will not be surprised to find some adverse friendly criticism as to those condemned by him, for certain varieties do remarkably well in one locality, and are practically failures in others. Generally, I am in agreement with his list of undesirables, with the following exceptions: King of the Pippins is, in my opinion, one of the very best dessert Apples. The tree makes a shapely specimen, especially as a pyramid or bush. With us this variety rarely fails to produce good crops. The fruit is of medium size, of pleasing appearance, good in flavour, and is at its best in mid-winter. Red Astrachan is one of the best early Apples here. The fruits are of good appearance and have a nice flavour, but must be eaten directly after they are gathered. Scarlet Nonpareil is a valuable late variety, with a flavour of its own. The tree is a constant bearer. When properly kept the fruits are at their best condition at the beginning of March. More surprising, in my opinion, is the large number of worthless Pears which are cultivated in this country. If something could be done to reduce both the list of Apples and Pears it would be a boon to all concerned. *Edwin Beckett, Udenham House Gardens, Elstree, Hertfordshire.*

ALEYRODES (WHITE FLY) (see p. 108).—We have been troubled with White Fly for the past two seasons, and fumigating with nicotine preparations has had no effect other than causing the insects to drop off the plants, to return again as soon as air is admitted in the morning. During the past winter I have fumigated several times with cyanide. I use sodium cyanide ¼ oz., phosphoric acid ¼ oz., and 1 oz. of water for each 1,000 cubic feet. This strength will kill all fully developed insects, but it is absolutely essential to fumigate again after an interval of a week or 10 days, as by that time other insects will have hatched out, and the fumigating should be continued until all the eggs have hatched. No plants have been injured at the above strength, even young fronds of Adiantum Ferns being unharmed. It is essential that the cyanide should be broken into pieces not larger than a Pea. The water should be placed in the receptacle before the acid. *G. H. Head, Fulwell Park Gardens, Twickenham.*

SOCIETIES.

ROYAL HORTICULTURAL.

MARCH 12.—The exhibition on Tuesday last followed much the same lines as the preceding ones of the present year, and was of about the same size as the last show, the only difference being that there were more Daffodils. The only awards made to novelties were recommended by the Orchid Committee, namely, two First-class Certificates and three Awards of Merit.

The Floral Committee awarded medals to eight groups. The best exhibit in this section was Messrs. ALLWOOD BROS.' collection of Perpetual-flowering Carnations. Messrs. H. B. MAY AND SONS again contributed a handsome exhibit of Ferns interspersed with groups of flowering plants such as Cinerarias and the grandiflora strain of Primula obconica. A mass of the climbing Banksian Rose was shown by Mr. GEO. PRINCE. Mr. G. W. MILLER exhibited some uncommonly good coloured Primroses and Polyanthuses in a general collection of hardy spring flowers, and a magnificent truss of Clivia Baroness Schröder, a fine orange-red variety.

Mr. L. R. RUSSELL staged well-flowered Wistarias, the floriferous Prunus triloba, and a number of Azaleas, set off by an edging of Tradescantia multicolor. Messrs. R. TUCKER AND SONS again showed Saxifrages in variety. Mr. G. REUTHE had also a number of Alpines, together with choice shrubs in pots and a number of Rhododendrons, including R. quinquefolium, a deciduous species with flattish blooms of a delicate blush shade, and R. lutescens, with numerous small, sulphur-yellow flowers. Messrs. R. GILL AND SONS also showed Rhododendrons. Their exhibit was principally composed of garden hybrids of the arboreum type; there were also good trusses of R. grande and R. ciliatum, set off by massive foliage, in separate vases, of R. Falconeri. In addition to Rhododendrons they showed vases of Polyanthus Pompadour, the finest crimson variety. Messrs. PIPER AND SON'S exhibit included pot plants of Olearia ramulosa, with starry, white flowers, like those of Aster ericoides.

The Fruit and Vegetable Committee recommended a Gold Medal for an exhibit of preserved fruits and vegetables shown by Mr. VINCENT BANKS on behalf of the bottling and drying section of the Food Production Department (Board of Agriculture). This exhibit may be said to be the finest of its kind ever staged at an R.H.S. meeting.

Floral Committee.

Present: Messrs. H. B. May (chairman), John Heal, W. B. Cranfield, G. Reuthe, S. Morris, J. W. Barr, C. R. Fielder, W. J. Bean, John Green, G. Harrow, E. F. Hazelton, C. E. Shea, A. Turner, J. W. Moorman, C. Dixon, J. Dickson, C. E. Pearson, W. P. Thomson, G. Paul, J. Jennings, E. H. Jenkins, R. W. Wallace, A. G. Jackman, and H. Cowley.

GROUPS.

The following medals were awarded to collections:—

Silver Flora Medal to Messrs. ALLWOOD BROS. for Carnations.

Silver Banksian Medals to Messrs. H. B. MAY AND SONS for Ferns and flowering plants; Mr GEO. PRINCE for Roses; Messrs. R. GILL AND SONS for Rhododendrons; Mr L. R. RUSSELL for flowering shrubs; and Mr G. W. MILLER, for spring flowers.

Bronze Flora Medals to Mr G. REUTHE for hardy plants and shrubs, and Messrs R. TUCKER AND SONS for Saxifrages.

Orchid Committee.

Present: Sir Jeremiah Colman, Bart. (in the chair), Sir Harry J. Veitch, Messrs. Jas. O'Brien (hon. sec. pro tem.), Gurney Wilson, W. Bolton, R. A. Rolfe, F. Boreham White, S. W. Flory, Walter Cobb, W. H. White, Pantia Ralli, T. Armstrong, Frederick J. Hanbury, R. G. Thwaites, J. Wilson Potter, W. H. Hatcher, and Fred. Sander.

AWARDS.

FIRST-CLASS CERTIFICATES

Cattleya Clotho var. General Pershing (*Enid* × *Trianae Grand Monarch*), from Messrs CHARLESWORTH AND CO.—An ideal flower, and one of the best, from a florist's point of view, ever raised. The finely proportioned flower has crimped petals, 3½ inches wide, and of pale rose colour; the equally broad and openly displayed lip is violet-crimson, with gold lines from the base.

Odontioda Windsor (see fig. 53) (*Oda. Sanderæ* × *Odm. illustrissimum*), from Messrs. FLORY AND BLACK.—A grand hybrid, equal in size and shape to a good Odontoglossum crispum, but the colour is scarlet with slight white markings on the margins and tips of the segments. The lip is mottled with light red, and there is a dark red blotch in front of the yellow crest.

AWARDS OF MERIT.

Sophro-Cattleya Mrs. J. Ansaldo (*S.-C. warnhamiensis* × *C. Empress Frederick*), from J. ANSALDO, Esq., Rosebank, Mumbles.—A pretty flower of good size, and in shape nearest to Cattleya. The sepals and petals are a delicate salmon colour with a rose shade; the lip, which has a wavy margin, is coloured purplish-rose with gold lines from the base.

Odontioda Alcantara var. rubra (*Oda. Cooksoniæ* × *Odm. eximium*), from Messrs. CHARLESWORTH AND CO.—A showy flower of a deep ruby-red colour with yellow crest to the lip.

Cattleya Cappei alba (*Schroderæ alba* × *Trianæ alba*), from Messrs. ARMSTRONG AND BROWN.—The flower is of large size and has the broad proportions of C. Schroderæ; it is clear white with a light yellow disc to the lip, and in general characters near to C. Lady Veitch.

CULTURAL COMMENDATION.

To Mr. Thurgood, gardener to H. T. PITT, Esq., Rosslyn, Stamford Hill, for a fine specimen of the rare Neo-Moorea irrorata, with two well-developed spikes.

GROUPS.

Messrs. ARMSTRONG AND BROWN, Orchidhurst, Tunbridge Wells, were awarded a Silver Flora Medal for a group in which were several excellent new hybrid Odontoglossums and Odontiodas flowering for the first time. Among the more notable plants were Odontioda Mars (Oda. Bradshawiæ × Odm. Mars), a large and finely-formed flower with the inner two-thirds of the segments heavily blotched with vinous red on a cream-coloured ground; Odontoglossum Nora var. Harlequin (illustrissimum × Dora), a large, white bloom, beautifully blotched with claret colour; and O. King Albert (crispum × Armstrongiæ), with violet-purple markings. The Cattleyas included C. Trianæ Edgar Knight, with rich purple lip like that of C. T. Imperator, and broad rose petals with the purple feather of C. T. Backhouseana.

Messrs. CHARLESWORTH AND CO., Haywards Heath, were awarded a Silver Flora Medal for an excellent group, principally of Odontiodas and Odontoglossums. The interesting and pretty Epiphaella Rolfei, with clear, rose-coloured flowers, and the new Odontonia Irene (M. Warscewiczii × O. hastilabium), with dark purple sepals and petals and blush-white lip, were attractive features.

Mrs. F. M. OGILVIE, The Shrubbery, Oxford (gr. Mr. Balmforth), was awarded a Silver Banksian Medal for a small but select group of finely-flowered Orchids, which included a plant of Odontoglossum Ceres Fowler's variety, with a fine spike of flowers; Cattleya Trianæ Moore Jane, C. T. Mafeking, and C. T. Rajah, the last-named being by far the best.

Messrs. HASSALL & Co., Southgate, were awarded a Silver Banksian Medal for a group of Cymbidiums, among which were two clear canary-yellow forms, a welcome variation from the usual type.

Messrs. SANDERS, St Albans, were awarded a Silver Banksian Medal for a group principally of hybrid Cymbidiums. Laelio-Cattleya Elfin (*C. Luddemanniana Stanleyi* × *L.-C. Canhamiana Rex*) has white sepals and petals and a violet blotch on the lip, which has a broad white margin.

Messrs. FLORY AND BLACK, Slough, showed several new hybrids, including Odontoglossum Rosslyn (Rolfeæ × illustrissimum), with large white flowers attractively marked with dark purple; Sophro-Laelio-Cattleya Beta (S.-L. Psyche × C. Maggie Raphael alba), of a clear Buttercup-yellow colour, and the white Cattleya Oenone alba.

Narcissus and Tulip Committee.

Present: Mr. E. A. Bowles (in the chair), Rev. J. Jacob, Messrs. W. Poupart, W. B. Cranfield, Herbert Chapman, J. D. Pearson, G. Reuthe, W. F. M. Copeland, and C. H. Curtis (hon. sec.).

Messrs. R. H. BATH, LTD., exhibited two groups, in the one case a fine display of Tulips, chiefly Darwin varieties, grown in fibre, the other of Narcissi. The Tulips scarcely made so fine a display as at the previous meeting. Nevertheless it was a very useful contribution, and the bowls of Le Rêve, Andromache, Flamingo (a possible rival to Clara Butt), Cramoise Royal, Rev. Ewbank, and Princess Hélène were especially good. The group of Daffodils included fine blooms of White Slave, Silver Dawn, The Fawn, and Evangeline. (Silver-gilt Flora Medal.)

Messrs. J. R. PEARSON AND SONS contributed a good exhibit of Daffodils, in which Giant Leedsii varieties were a feature. A few of the best flowers were Louise Linton, Norah Pearson, Florence Pearson, Vega, Whitewell, Great Warley, Madame de Graaff, and King Alfred. (Silver Flora Medal.)

Fruit and Vegetable Committee.

Present: Messrs. J. Cheal (in the chair), W. Poupart, W. Bates, Edwin Beckett, A. R. Allan, G. Reynolds, Owen Thomas, W. H. Divers, E. A. Bunyard, W. Wilks, and G. P. Berry.

Messrs. J. CHEAL AND SONS showed dishes of late-keeping dessert Apples, including Cornish Aromatic, Brownlees' Russet, Sturmer Pippin, Boston Russet, and William Crump. The flavour of Brownlees' Russet was very good, but Cornish Aromatic was past its best stage. William Crump was the handsomest variety, but although the flavour was excellent the mealy flesh showed that it was no longer in first-rate condition.

A collection of autumn-sown Beets was exhibited from the Society's gardens at Wisley. The trial proved that varieties of the long-rooted type are of no value for winter cropping, but that the Egyptian, or Turnip-rooted sorts, are capable of standing the winter well, and are tender, the flesh being free from fibre, which develops in the tap-rooted kinds.

UNITED HORTICULTURAL BENEFIT AND PROVIDENT.

ANNUAL MEETING.

APRIL 11.—The annual meeting of this Provident Society was held in the Royal Horticultural Hall on Monday, the 11th inst., Mr. Charles H. Curtis presiding.

The annual report of the Committee stated that the Society continues to flourish. The chairman pointed out that the Committee dealt in the most sympathetic manner possible with those members who, having served their country in the fighting line, came home injured but omitted to claim benefits immediately after landing. The turnover for the year was £4,873 on the ordinary side: £2,000 was invested, and £1,763 15s. 6d. paid out in benefits, etc. The cost of management was £50 18s. 6d.; the sum of £206 6s. 8d. was paid in sick pay to wounded soldiers and sailors. Thirty-four members have been killed in action, and the sums paid to their nominees amounted to £244 3s. Reference was made to the establishment of a juvenile branch, and to the loss sustained by the death of Mr. Leopold de Rothschild, patron of the Society, and Mr. Wm. Marshall, who, with the late Mr. Shirley Hibberd, was a founder of the Society.

After the adoption of the report and accounts thanks were accorded to the trustees, Messrs. Jas. Hudson, Riley Scott, and C. H. Curtis. For 36 years Mr. Jas. Hudson had made the chief investments of the Society, and during that time has seen the investments rise from £2,000 to £52,800. A letter from the Society's brokers referred to the splendid financial position of the Fund and the security of its investments. Mr. A. C. Hill was reappointed

secretary, Mr. Thos. Winter was re-elected treasurer, and the retiring members of Committee, Messrs. A. C. Bartlett, T. R. Butler, A. E. Cresswell and E. F. Hawes, were re-elected.

Sir Harry J. Veitch has consented to become a patron in the place of the late Mr. Leopold de Rothschild.

BRITISH GARDENERS'.

MARCH 8.—A meeting of the British Gardeners' Association was held in St. Stephen's Hall, Coventry, on Friday, the 8th inst. when Mr. Cyril Harding explained the aims and objects of the Association, which is now a recognised trade union.

He made reference to the long hours, low rates of wages, and other disadvantages under which the gardener laboured, as compared with other skilled workers. He emphasised the necessity of professional gardeners being organised to make good their demands, and wound up with a spirited appeal to all horticultural workers to become members of the Association.

Mr. Harding stated that the chief objects of his society were to secure a complete organisation of all horticultural workers; to improve the conditions of labour; to secure reasonable working hours and higher rates of wages; to settle disputes between employers and employees; to provide temporary assistance to members when out of employment; to obtain proper hothy and housing accommodation; a compulsory character note; and a weekly half holiday and payment for overtime. At the close of the meeting a Coventry branch was formed and over twenty members enrolled.

CROPS AND STOCK ON THE HOME FARM.

SAINFOIN

THE recent order that all land carrying Sainfoin over five years old must be ploughed and sown with corn will considerably reduce the acreage of this valuable hay crop and sheep feed in this country. Sainfoin is much favoured for the best type of hay for sheep and horses in districts where it succeeds well. In some cases Sainfoin leys when over five years old are worn out; other fields of this crop last longer. The condition of the land when the seed was sown is the governing factor of how long Sainfoin will continue profitable. No matter how small a quantity of Couch the land contains, that Couch spreads quickly, and in time the grass smothers the Sainfoin so effectively that its life of serviceable use is limited. The present price of seed being eight guineas per quarter, there is not much encouragement to sow more land with this crop. Still, Sainfoin is valuable feed, and there are many who are sowing. The present dry weather affords a good opportunity of getting in the seed on autumn-sown Wheat or along with Oats or Barley. In all cases the recent frost has pulverised the soil sufficiently to provide a perfect filth for a seed bed. If sown with Wheat it should be done crosswise to the Wheat drills, so that the harrowing of the Wheat in front of the drill and afterwards will not drag up too many of the Wheat plants. With the ordinary corn drill sow 4 bushels per acre of Sainfoin, following the harrows after the drill and rolling behind to make the seed and Wheat plant firm. When sown with Oats or Barley the seed should be drilled, it matters not in which direction. The harrowing necessary for the corn serves for the Sainfoin too.

TREFOIL AND ITALIAN RYE GRASS

For sheep that are kept mainly on arable land throughout the year a mixture of Trefoil at the rate of 6 lbs. per acre and 1 bushel of Italian Rye grass provides much useful green food for ewes and lambs in June of the following year. If not required then, owing to other foods being plentiful, an extra crop of hay is assured. The seed is sown with Oats or Barley, the harrowing necessary for these cereals benefiting also the grass seeds when sown by the aid of a separate hand seed harrow.

PREPARING THE LAND FOR MANGOLD, CABBAGE AND POTATOES.

THE present fine weather should be utilised for getting fallow land into a workable condition for these crops to be sown and planted in April. Cross-ploughing stiff soil disintegrates the clods and disturbs Couch and other weeds which may be troublesome later if not interfered with before sowing time arrives.

TRIFOLIUM INCARNATUM.

CRIMSON Clover, intended to provide green food for horses, cows, and pigs during May and June, is generally looking promising. Where the plant shows a tinge of chlorophyll or green colouring matter in the leaves and general weakness it should be assisted by the application of sulphate of ammonia sown evenly at the rate of 1 cwt. per acre on a dry day when dew is on the leaves. *E. Molyneux.*

COUCH AS FOOD FOR STOCK.

EXPERIMENTS are being made to determine the value of dried Couch grass as fodder, and the Board of Agriculture and Fisheries suggest that farmers whose land is foul should collect the Couch grass and instead of burning it should store it when dry. Should the Couch grass be found as the result of the experiments to be unsuitable for feeding alone, it would be of use in view of the shortage of feeding stuffs, to mix with other fodder, and, in any case, if shortage of labour and other circumstances preclude its utilisation in this way, it can afterwards be burnt as is now done, or better still, rotted down for manure.

THE LATE MR. HERBERT J. CUTBUSH.

CONDITION OF THE CROPS.

THE crop reporters of the Board of Agriculture, in reporting on agricultural conditions in England and Wales during February, state that the autumn-sown Wheat is everywhere looking well and promising, especially in the West, where in a few places it is regarded as being almost too forward. Winter Oats are generally also a good and promising crop. Beans are rather more variable, the plant being thin in a few districts, but otherwise healthy and satisfactory. The weather during February was very favourable to field work, having been universally mild and open, though with rather too much rain in some of the northern districts. Ploughing and cultivation accordingly made rapid progress, and much spring Wheat was got in under favourable conditions. Wheat sowing is not yet completed, and another 10 per cent. of the total Wheat area probably still remains to be sown, but this work is more nearly finished in the east than in the west. In most districts some Oats and Barley have also been got in, but the seeding of these cereals is generally only just beginning. Spring work is well forward for the time of year.

Seeds are, except in the north-eastern side of the country, where they are often thin owing to the dry summer last year, a good plant, growing well, and giving satisfactory promise. A considerable has in most parts of the country been ploughed up for corn, so that it may be safely said that the total area under Clovers and rotation grasses will be somewhat reduced.

Obituary.

HERBERT J. CUTBUSH.—We announce with deep regret the death of Mr. Herbert J. Cutbush, head of the firm of Messrs. Wm. Cutbush and Son, nurserymen, Highgate and Barnet. He died on Thursday, the 14th inst., after a long illness, aged fifty-three years. When a young man Mr. Cutbush was called upon to take charge of the nursery business in succession to his father, whose early decease will be remembered by many of our readers. Mr. Herbert Cutbush showed great energy, and in conjunction with his brother, Mr. William Cutbush, built up a large business, especially in landscape gardening, hardy plants, fruit trees, Roses and Carnations. The firm's exhibits at all the leading London and provincial shows made the name of Cutbush more famous than it had ever been; the good humour and pleasing personality of Mr. Herbert Cutbush did as much as the exhibits to place his firm in the forefront. Some years ago Mr. Cutbush was taken ill, and though there was partial recovery for a time he was eventually confined to his home, leaving the conduct of the business in the hands of his brother and his son, Mr. Leonard Cutbush. Although death came as a happy release from long suffering, a large circle of friends and acquaintances will mourn the loss of a genial and business like man who had the habit of always looking at the bright side of things. He died at his residence, Normanhurst, Broadlands Road, Highgate, and his remains were interred at Highgate Cemetery on Monday, the 11th inst. The funeral service was held at St. Michael's Church, Highgate.

WILLIAM CLARK.—We regret to announce the death of Mr. William Clark, nurseryman, Carlisle, who has recently died at the age of seventy-four. He was born near Tayport, in Fifeshire, and began his professional career in a Dundee seed business, after one or two changes becoming manager to Messrs. Little and Ballantyne, of Carlisle. Forty-five years ago he started a business in the same city in conjunction with his brother, a business which has flourished and finally became one of the largest in the district. Mr. Clark was one of the first English nurserymen to export Gooseberry bushes to America, and for some years did a large trade with the United States. He was also an authority on forest trees, and in 1886 gained the first prize and silver medal of the Royal Arboricultural Society for an essay on diseases of the Larch and Pine. Five years ago the firm was converted into a private limited company, when Mr. Clark retired from active participation in the business. He is survived by his widow and one son.

THOMAS TYRER.—We regret to learn of the death of Mr. Thomas Tyrer, head of the well-known firm of insecticide and other chemical manufacturers, at Stratford. He died suddenly on February 20, aged seventy-five. Deceased was educated at the Royal College of Science, and was for many years consulting chemist in the firm of May and Baker, of which he was eventually managing director, but for nearly twenty years before his death he conducted his own business with conspicuous success. He was a member of the council of the Association of British Chemical Manufacturers, and on the executive of the National Physical Laboratory. He had a wide and intelligent outlook, and did much to serve the interests of chemical science in this country.

MARKETS.

COVENT GARDEN, March 13.

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 average for the week preceding the date of our report. The prices depend upon the quality of the samples, the way in which they are packed, the supply in the market, and the demand, and they may fluctuate not only from day to day, but occasionally several times in one day.—Eds.

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

	s. d.	s. d.		s. d.	s. d.
Adiantum	4 0– 5 0		Cyclamens	21 0–24 0	
Araucaria excelsa	7 0– 8 0		Cineraria	10 0–12 0	
Asparagus plumosus	10 0–12 0		Erica persoluta	36 0–42 0	
— Sprengeri	9 0–10 0		— Wilmoreana	30 0–36 0	
Aspidistra, green	36 0–42 0		Genistas	18 0–24 0	
Ferns, in variety	18 0–24 0		Marguerites, white	9 0–10 0	
			Mignonette	12 0–15 0	

REMARKS.—More business is being done in pot plants this week. Ferns are of much better quality, and flowering plants are receiving more attention. Pink and white Hydrangeas are being offered.

Ferns and Palms Average Wholesale Prices.

	s. d.	s. d.		s. d.	s. d.
Adiantum cuneatum, 48's, per doz.	9 0–10 0		Nephrolepis, in variety, 48's	12 0–18 0	
elegans	9 0–10 0		8's	24 0–36 0	
Asplenium, 48's, per doz.	9 0–12 0		Pteris, in variety, 48's	8 0–12 0	
— 32's	24 0–24 0		large 60's	4 0– 5 0	
— nidus, 48's	10 0–12 0		small 60's	2 0– 3 6	
Cyrtomium, 48's	8 0–10 0		— 72's, per tray of 18's	2 0– 2 6	

Cut Flowers, &c: Average Wholesale Prices.

	s. d.	s. d.		s. d.	s. d.
Anemone fulgens per doz. bun.	3 0– 4 0		Lilium, con. — — short, per doz. blooms	2 6– 3 0	
Arums— — (Richardias), per doz. blms.	8 0– 9 0		Lily-of-the-Valley, per doz. bun.	30 0–36 0	
Azalea, white, per doz. bunches	4 0– 5 0		Narcissus, Grand Primo per doz. bun	3 0– 4 0	
Camellias, white, per doz.	2 6– 3 0		— ornatus	4 0– 6 0	
Carnations, per doz. — blooms, best American var.	2 6– 4 0		— Soleil d'Or	3 0– 4 0	
Croton leaves, per bun.	1 3– 1 6		Orchids, per doz.:— — Cypripediums	4 0– 6 0	
Daffodils (single), per doz. bun — Barrii	4 0– 5 0		Pelargoniums, double scarlet, per doz. bunches	12 0–18 0	
— Emperor	6 0– 8 0		Roses, per doz. blooms — Ladylove	8 0–12 0	
— Golden Spur	4 0– 5 0		— Niphetos	4 0– 5 0	
— Princeps	3 0– 4 0		— Richmond	8 0–12 0	
— Sir Watkin	3 0– 4 0		— Sunburst	8 0–12 0	
— Victoria	5 0– 6 0		Snowdrops, per doz bun.	3 6– 4 0	
Eucharis, per doz. blooms	3 0– 4 0		Tulips, per doz. blooms — Darwin, various	2 0– 3 6	
Freesia, per doz. bun.	3 0– 4 0		— — Purple, white	3 0– 4 0	
Heather, white, per doz. bun.	9 0–12 0		— — Yellow	2 6– 3 0	
Lilium longiflorum, long	7 0– 8 0		— — Pink	2 0– 3 0	
— — rubrum, per doz. long	4 0– 5 0		— — Red	3 0– 4 0	
			— Double, red	3 6– 3 0	
			— Yellow	4 0– 4 0	
			Violets, per doz. bun.	4 0– 5 0	

French Flowers: Average Wholesale Prices.

	s. d.	s. d.		s. d.	s. d.
Anemones, double pink, per doz. bun.	2 6– 3 0		Ranunculus, garnine, per doz. bun.	8 0– 9 0	
single, mixed	5 0– 6 0		— scarlet	15 0–18 0	
Mimosa (Acacia), per bushel	6 0– 8 0		Stocks, white, per pad	12 0–14 0	
Narcissus, per basket	3 0– 4 0		Violets, Parma, per bun.	4 0– 5 0	
— Paper white	1 0–1 6		— Star, Allium, per pad	10 0–12 0	

Cut Foliage, &c.: Average Wholesale Prices.

	s. d.	s. d.		s. d.	s. d.
Adiantum (Maidenhair Fern) best, per doz. bun.	8 0–10 0		Berberis, per doz. bun.	6 0– 8 0	
Asparagus plumosus, long trails, per half-dozen	2 6– 3 0		Carnation foliage, doz. bunches	4 0– 5 0	
— — medium, doz. bunches	1 8–2 1 0		Cycas leaves, per doz.	3 0– 6 0	
— Sprengeri	10 0–15 0		Fern leaves, per doz. bunches	2 0– 2 6	
			Moss, gross bun.	7 0– 8 0	
			Smilax, per bun of 6 trails	2 0– 2 6	

REMARKS.—White flowers are again increasing in value. Lilium longiflorum and Richardias (Arums) have advanced considerably in price this week. Lily-of-the-Valley is reduced in quantity, which has caused a further increase in price. Coloured flowers show little change from last week. Carnations are sufficient for the demand. Roses, although more plentiful, are not much cheaper at present. Violets from the Channel Islands have been irregular during the last week, and consignments are smaller. The non-arrival of French flowers caused disappointment to many buyers on two or three days of last week. Paper-white Narcissus appear to be nearly over, and there are very few white flowers to take their place. However, White Stock and Star of Bethlehem (Allium) should be more plentiful in a few days.

Vegetables: Average Wholesale Prices.

	s. d.	s. d.		s. d.	s. d.
Artichoke, Chinese (Stachy) per lb.	1 3– 1 6		Lettuce, Cabbage, per doz.	2 6– 3 0	
— Globe, per doz.	8 0–12 0		Mint, forced, per doz bun.	2 0– 4 0	
— Jerusalem, per ½ bushel	4 0– 5 0		Mushrooms, per lb.	3 0– 4 0	
Asparagus (English), per bundle	10 0–12 0		Mustard and Cress, per doz. punnets	1 0– 1 3	
— National, per bundle	26 0–27 0		Onions, French, per cwt.	35 0–40 0	
— (Paris Green), per bundle	10 0–10 0		— spring, per doz. bun.	2 0– 5 0	
Beans:— — French (Channel Islands), per lb.	2 6– 3 0		— Valencia, per case (4 tiers)	35 0–40 0	
Beetroot, per bus.	3 0– 4 0		— (6 tiers)	35 0–40 0	
Brussels Sprouts, per 1 bus.	2 6– 3 0		Parsnips, per bag	5 0– 6 6	
Cabbage, per bag	2 0– 3 6		Potatos, new, per lb.	1 3– 1 6	
Carrots, new, per doz. bunches	3 0– 4 0		Radishes, per doz. bunches	1 6– 2 6	
— per bag	2 6– 3 6		Rhubarb, forced, per doz.	2 0– 3 0	
Cauliflowers per doz	4 0– 6 0		Savoys, per tally	8 0–10 0	
Celeriac, per doz.	5 0– 7 0		Seakale, per punnet	2 6– 3 0	
Celery, per bundle	4 6– 4 6		Shallots, per lbs.	8 0–10 0	
Chicory, per lb.	0 6– 0 8		Spinach, per bus.	5 0– 6 0	
Cucumbers, per doz.	6 0–12 0		Swedes, per bag	2 0– 3 0	
Endive, per doz.	4 6– 6 0		Turnips, per bag	3 0– 5 6	
Garlic, per lb.	0 8 —		Turnip tops, per bag (72 lbs.)	3 0– 3 6	
Greens, per bag	2 0– 3 0		Vegetable Marrows, per doz.	24 0–30 0	
Herbs, per doz bun.	2 0– 4 0		Watercress, per doz.	0 8 —	
Horseradish, per bun.	3 0– 4 0				
Leeks, per doz. bun.	3 0– 4 0				

Fruit: Average Wholesale Prices.

	s. d.	s. d.		s. d.	s. d.
Almonds, per cwt	170 0 —		Grapes, con.— — Gros Colman, per lb	4 0– 9 0	
Apples:— — English, per bus.	25 0–30 0		Lemons, per case	38 0– 46 0	
— Russets, French, in case of about 60 to 70 lbs.	50 0 55 0		Nuts, Barcelona, per bag	150 0 —	
Dates, per box	1 7– 1 8		— Cob, per lb	1 9–1 10	
Grapes, Black Alicante, per lb.	4 0– 6 0		Oranges, per case	42 0–130 0	
— Almeria, per barrel (½ doz. lbs.)	50 0–70 0		Strawberries, forced, per lb.	15 0–20 0	
			Walnuts, kiln dried, per cwt.	100 0–110 0	

REMARKS.—Apples are now much scarcer. Forced Strawberries are available in limited quantities. English Grapes are limited in supply, and Spanish kinds are more in demand. Forced Marrows are now on offer. Other forced Vegetables obtainable are Dwarf Beans, Asparagus, Endive, Mushrooms, Cucumbers, Seakale, Mint, New Potatoes, and Peas. The market is fairly well supplied with outdoor vegetables and roots. *E. H. R., Covent Garden Market, March 18, 1918.*

THE WEATHER.

THE WEATHER IN SCOTLAND.

For the greater part of February the weather was mild, dull, and showery, but the temperature fell sharply on the last day, when a severe blizzard heralded the advent of spring. The total rainfall was 2·15 inches, but showers were so frequent that there were only five days on which no rain was collected, the greatest fall on one day being 0·53 inch on the 17th. Sunshine was very meagre, a total of 61·2 hours for the whole month, being an average of 2·2 hours per day, and a percentage of — The highest barometric pressure of 30·57 inches was recorded on the 25th, and the lowest of 29·75 inches on the 9th, while the mean for the month was 29·95 inches. The mean temperature was 41·5°, with a mean range of 10·4°, and an absolute range of 27°. On the 22nd the highest maximum reading of 57° was obtained, and on the 1st the lowest minimum of 30°, while the lowest maximum and highest minimum of 36° and 45° respectively were registered on the 28th and 23rd. On the grass the mean minimum temperature was 32°, with a lowest of 24° on the 1st. There were eleven nights of ground frost. At 1 foot deep the mean soil temperature was 38·8°, rising during the course of the month from 38° to 41°. The ground was clear of snow till the 23rd, when heavy drifting accompanied a fall which lasted from 9 a.m. to 11 p.m. The prevailing winds were southerly, more so in the afternoons, and westerly. *James Mallach, Director of Studies, St. Andrews Training College Gardens, Kirkton of Maines, near Dundee.*

GARDENING APPOINTMENT.

MR. GEO. MILLER, recently discharged from the London Scottish Regiment, previously Gardener to Mrs. GOODMAN, Alyth Bank, Clapham Park, and formerly of Tring Park, Compton Place, Eastbourne, Cumberland, as Gardener to the Earl of LICHFIELD, Shugborough Hall, Stafford.

CATALOGUES RECEIVED.

KENT & BRYDON, Darlington.—Farm seeds.

PERRY'S HARDY PLANT FARM, Enfield, Middlesex.—Alpines and Perennials.

Foreign.

A. BLONDEAU, ANDRIEUX & CIE, 4, Quai de la Mégisserie, Paris.

W. ALLEE, BUHPEE & CO., Burpee Buildings, Philadelphia, U.S.A. Seeds.

V. LEMOINE & SON, Rue du Monlet, 136-142, Nancy, France. Plants and seeds.

Canada

A. E. MCKENZIE & CO., LTD., Calgary, Alberta, Canada.—Seeds.

ANSWERS TO CORRESPONDENTS.

BLETIA HYACINTHINA: *Ignorant.* As the plant is happily established, why not leave well alone? If it is necessary to enlarge the plantation, the best way to increase the stock is by division just before growth commences. Take up the plant, pull it apart, and place the pieces in small pots filled with a mixture of loam and leaf-mould, with plenty of material for drainage. Grow the plants in a close, cool frame until the roots are re-established, and then gradually admit more air and harden them off for planting outside.

BLUE HYDRANGEAS: *F. J. H.* In order to obtain Blue Hydrangeas it is first essential to make sure that the soil in which the plants are growing is free from lime, chalk, or any other calcareous substance. Water the plants with rain-water and add to it about a quarter of an ounce of sulphate of iron or sulphate of ammonia to the gallon.

CALORIC VALUES: *G. H. H. W.* 1 lb. of Potatos (edible part only) = 385 calories; 1 lb. Haricot Beans = 1,580 calories; 1 lb. beef (best parts) = 1,100 calories (down to about 750 for skin, etc.). In making calculations of this kind the amount produced from a certain area of ground in a certain time should, of course, also be taken into consideration.

EARLY-FLOWERING PLANTS DAMAGED BY INSECTS: *Dorset Gardener.* The damage may be caused by small black slugs or woodlice. Woodlice can be trapped in pots filled with hay placed near the plants. Slugs may be kept away by sawdust, as recommended on p. 108.

NAMES OF FRUITS: *J. E. W.* Apple Herefordshire Pearmain; Pear Vicar of Winkfield. Most stewing Pears decay in the same manner as your fruits.—*Editha Jamieson-Grist* Calville Rouge.—*H. E.* Old Nonpareil.

PLUMS IN POTS: *I. S.-E.* The varieties of Plums you name—Jefferson, Denniston's Superb, Quillin's Golden Gage, Coe's Golden Drop, and Victoria—are all good bearers, and you should have no difficulty in the fruits setting freely. Constant attention must be given to the ventilation of the houses whilst the trees are in blossom. Do not allow the house to be absolutely closed for any length of time, and then only in frosty or windy weather. Plums, on the whole, do better in a slightly lower temperature than is necessary for Peaches. If the Plum trees are growing in a span-roofed Peach house, arrange them on the northern or eastern side, away from the direct rays of the sun. If they are large specimens, give them a sharp tap every day when the atmosphere is quite dry to distribute the pollen. The flowers can be brushed with a rabbit's tail to pollinate them, but the best means of ensuring the fruits setting is to place a hive of bees in the house. Keep the atmosphere dry, and I do not allow the night temperature to exceed 45° to 50°, the lower degree being preferable.

POTATOS IN SUCCESSIVE YEARS: *Delta.* If you thoroughly dig the ground, remove all old tubers, burn the weeds and haulm left over from last year, and apply plenty of manure, there is no reason why you should not have a good crop of Potatos again this season. We know of instances where Potatos have been successfully grown on the same plot for thirty years without a break.

WASTE FROM A TANNERY: *H. E.* The sample of tannery waste is of some fertilising value, but its mechanical condition is very rough, and it would want drying and breaking up before it could be used. The material sent contains a fair amount of lime, which is distinctly useful on the land, and also a quantity of hair, which is of less fertilising value. It is not possible to say how much the material is worth from the sample sent, as it is impossible to tell from this how much water is present in the bulk. Generally speaking, these residues are worth haulage, but not a great deal more.

Communications Received.—E. M. C. C. R.—E. M. B.—G. H. H. W.—J. A. P.—J. H. P. G.—R. of A.—J. B. F.—H. E.—G. C.—M. J. W.—C. D.—C. T.—S. & H.—E. J. G. (thanks for 28, 61, R.G.O.F. box.)

THE
Gardeners' Chronicle
No. 1650.—SATURDAY, MARCH 23, 1918.

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ILLUSTRATIONS.

THE HISTORY OF CULTIVATED FRUITS.

AS TOLD IN THE LIVES OF GREAT POMOLOGISTS.

ROBERT THOMPSON.

IT has been said that the world knows little of its great men, and in few cases is the assertion truer than in that of Robert Thompson. His work as a Pomologist, especially in the rectification of nomenclature, places him in the front rank; in my opinion he is our greatest British Pomologist. A man of singular modesty, he preferred to work behind the scenes, and so long as he could bring order into chaos he seemed to care little who obtained the credit for such work. Lindley, London, and Dr. Hogg, to mention a few names only, owed much to his painstaking study of fruits, and used it in their own publications, not always with the acknowledgment that was his due. Of Thompson's history not much is known: short obituary notices in the *Gardeners' Chronicle* and in the *Journal of Horticulture* published shortly after his death comprise all the printed information I have been able to discover; but through the rule that held at Chiswick, under which all entering the Garden of the Royal Horticultural Society recorded in a book an account of their lives to date, I was enabled to find authentic information as to his early career. The entry runs as follows:—

"Robert Thompson, admitted October 21, 1821, upon the recommendation of Sir R. Fergusson. I was born in the year 1799, in the parish of Echt, in the county of Aberdeen, where my father had a small farm. From five years of age, and when fourteen I was with my uncle, who was gardener to Mr. Skene of Skene. I was part of the time, from 1813 to 1819, at school, and occasionally employed in the garden and plantations belonging to the gentleman above mentioned. I then worked at the gardens at Haddo House, the seat of the Earl of Aberdeen, until November, 1820, when I went to Lord Kennedy's gardens at Dunnottar, where there one year, and in November, 1821, I went to the gardens of Robert Fergusson, Esq., of Raith, where I worked for nearly three years, and on leaving that place I came to the Garden of the Society, being twenty-five years of age and unmarried. *Robert Thompson.*"

Chiswick at that date devoted very considerable attention to fruits, and the large collection of trees was just coming into bearing, so Thompson, being put in that department, had an admirable opportunity for study. The careful work on revising hardy fruits, *The Catalogue of Fruits cultivated in the Garden of the Horticultural Society at London*. The first edition of this work was published in 1826 and was not much more than a list of

ROBERT THOMPSON.

names. In the second edition of 1831 the synonyms had largely been worked out and brief descriptions were added. When it is realised that some 1,400 Apples, 219 Cherries, and 677 Pears are dealt with, to mention no other fruits, it will be seen that Thompson's first seven years at the Gardens were well occupied. The Society, in their preface, generously acknowledged that whatever merit the catalogue possessed was due to Thompson, who at that time (1831) was in charge of the Fruit Department. The third edition of the catalogue appeared in 1842 and was reduced by the omission of many worthless sorts, and the synonyms being given in italics in their alphabetical order greatly facilitated reference. The great amount of work this publication entailed can only be appreciated by those who have attempted a similar task, and the evidence still happily exists in the MS. drawings of fruits in the possession of the Society, in which the process of revision can be traced.

In 1827 the publication of the *Pomological Magazine* was commenced, and in this Thompson had some part, though how much it is difficult to discover. In the [illegible] of the Apple Court Pendu Plat he [illegible] as "a young man of first-rate [illegible] in his profession, to whose good [illegible] practical knowledge we are [illegible] take this opportunity of expressing [illegible] gratification for assistance in the production of [illegible] work." This work was [illegible] 1841 as the *Pomologia Britannica*, but the text was unchanged, so Thompson appears again as a "young man." In 1842 London published a new edition of his great *Encyclopædia of Gardening*, and to this Thompson prepared revised and enlarged descriptions and classifications of the fruit sections, which work was duly acknowledged by London in the preface. A great deal of Thompson's work for the Royal Horticultural Society is to be found in the *Transactions*, and in Series 2, Vol. I., are his excellent monographs on the Apricot, Gooseberry and Cherry, models of careful and painstaking work. From this and other work it would seem that Thompson had some knowledge of French and German, or was at least assisted in this direction, as references to French and German literature are frequent and reliable.

The work, however, with which his name will always be associated is the *Gardener's Assistant*, the "Gardener's Bible," as it has been termed. This was published in 1859. This work was almost entirely his own production, and it is difficult even to-day to find in one cover so much sound information conveyed in a clear and ordered manner. With all respect for recent editions, I must confess a preference for the work as it came from the master's hand, and in matters of culture it can yet be profitably consulted. The descriptions of fruits are excellent within their limitations; in many cases tree characters are described, and in all we find the salient characters selected with judgment. A glance through the 774 pages reveals the author as more than a fruit specialist. Every subject is treated with authority; we find a trace of Lindley's pontifical manner in the early chapters on physiology of plant life, but nearly all has the true ring of the man who has worked before he wrote.

Of Thompson's work in the periodicals of the day it is not so easy to speak. He contributed to the *Suburban Horticulturist*, *Penny Cyclopædia*, *Cyclopædia of Agriculture*, Moore's *Treasury of Botany*, the Edinburgh *Philosophical Magazine*, etc. His articles in the *Gardeners' Chronicle* were not signed, but may be recognised by the double dash (——) which was all his modesty allowed. From this mark we gather he was the chief authority referred to by the paper for many years in matters of fruit nomenclature. He retired from the employment of the Horticultural Society in April, 1868, on full pay, and so towards the end of his life presented with a purse of £100 raised by public subscription. His death occurred in 1869. By the kindness of Mr. Barron Wyatt I am able to conclude this article [illegible] very in-

* Previous articles appeared in our issues for June 14, July 26, and August 30, 1913, May 2, November 5 and 26, 1914, June 12, and September 4, 1915.

teresting note, which very happily preserves for us a picture of Thompson as he appeared in his latter days; and I am also obliged to him for the loan of the portrait, this being, I believe, the first time that it has been reproduced. *E. A. Bunyard.*

"I left Shrewsbury on the morning of March 26, 1836, changed trains at Reading, from the Great Western to the London and South-Western Railway, and landed at Chiswick station somewhere about 10 p.m., long after the gardens were closed. I was in need of food and shelter for the night, and the station master at Chiswick kindly took care of my few belongings and gave me a note of introduction to an innkeeper in the village, about a mile away, who equally kindly welcomed a stranger within his gates. He enquired where I was bound for on the morrow, and on learning my destination, said, 'Oh, that's all right. Go into that room and you will find Mr. Thompson there; make yourself known to him, while I get you some supper.' I found an old gentleman sitting by the fire smoking the favourite 'church-warden' of those days. He was very silent and reserved at first, but presently thawed, and then I found myself in the presence of the great man, the author of *The Gardener's Assistant*, in his usual somewhat shy but most amicable mood. He locked me up in the garden the next day, and the friendship ripened. For some forty or more years Mr. Thompson had compiled a series of daily meteorological records at the gardens, and it became my pleasure later, when he became too enfeebled to come to the garden night and morning regularly, to take the records for him. His little office was next door to the bothy allotted to me when Mr. Barron promoted me to be foreman of the fruit department, and all old Chiswick men will remember the bothy at the back of the early vinery. My change of quarters led the old gentleman often to come and spend an hour or two and smoke his pipe with me, before taking his records at 9 p.m. His knowledge of gardening was encyclopædic, and when questioned on any subject his answers were concise and to the point; but they were always given guardedly, and seldom without the preliminary proviso 'I think.' Mr. Barron used to claim for him that he was the greatest living authority on fruits, but when acting as pomological referee to *The Gardeners' Chronicle*, as he did for many years, he never was dogmatic in his identifications, but although quite certain in his mind, almost invariably prefaced the name with 'I think this is,' or 'we think this is' so-and-so. From Mr. Thompson I learnt a great deal concerning the early history of the Royal Horticultural Society and of the origin of Dr. Hogg's *Fruit Manual*, which was based on Mr. Thompson's records and descriptions, then kept in the old fruit room at Chiswick. But that is another story; certain it is that owing to his shyness, extreme reserve generally, and Scottish caution, justice has never been done to him for the splendid work he did for British pomology at Chiswick." *Brian Wynne*

Fig. 55.—CYNORCHIS PURPURASCENS.—FLOWERS ROSY PURPLE.

ORCHID NOTES AND GLEANINGS.

CYNORCHIS PURPURASCENS.

CYNORCHIS PURPURASCENS (see fig. 55), a terrestrial Orchid with a solitary leaf 2 feet long and 3 inches wide, and a stout peduncle one foot long bearing a large, globose head of showy rosy-purple flowers, is as remarkable among its kind as the great monophyllous Streptocarpus Dunnii is among Gesnerads. Both plants made their début at Kew, the latter in 1836, when its leaves, 3 feet by 16 inches, sprawled over a gravel bed in the Succulent House, causing quite a botanical sensation; the former in 1902, when Sir Joseph Hooker described the plant as the largest-leaved Orchid known. The species was introduced from Madagascar by Mr. G. Warpur, together with many other interesting plants, including the lovely red-lipped Cymbidium rhodochilum, which flowered once at Kew and nowhere else. This is a plant worth sending specially to Madagascar for, in view of what is being done by breeders with the genus Cymbidium. Cynorchis purpurascens has a tuberous rootstock, and the leaves are annual. The flowers, which are produced in winter and last a month or more, are about 1½ inches across, the large, four-lobed, crenulated lip being the most striking feature, the conspicuous white disc set in the middle of the spreading rose-purple lobes and backed by paler-coloured sepals being decidedly pleasing. The plant thrives in an intermediate house, and the fact that it has now flourished at Kew for 16 years shows that it is not difficult to cultivate. It flowered there as usual this winter. C. Kewensis, a hybrid between C. purpurascens and C. Lowiana, raised at Kew some years ago, has also flowered at Kew lately. W. W.

ORCHIDS FROM WESTONBIRT.

Mr. H. G. Alexander sends from Westonbirt Gardens, Tetbury, some finely developed blooms of specially choice Orchids.

Laelio-Cattleya Orange Blossom, a new hybrid between L.-C. Elinor (C. Schroderae × L. Coronet) and L.-C. Trimyra (C. Trianae × L.-C. Myra), is the most vivid self-coloured dark orange hybrid we have seen. Although C. Trianae enters twice into its composition and gives the hybrid large size and good shape, the yellow and reddish-orange in L. flava, L. cinnabarina, and L. harpophylla in its lineage excludes all cyanic tints.

Laelio-Cattleya Aurede (C. Iris × L.-C. luminosa), taken from a spike of nine flowers, is a bright copper-red variety with a ruby-coloured front to the lip, which has a pink base with gold veining.

L.-C. Ilma, between L.-C. Myra (C. Trianae × L. flava) and L.-C. Tigris (L.-C. Dominiana × L. Cowanii), all the parents of which were raised at Westonbirt, is bright buttercup-yellow, with a dark maroon lip much undulated at the edge and having a yellow base.

Cattleya Enid alba is represented by a large and perfectly formed pure white flower, the ample lip of which is veined and tinged with violet colour and the disc pale yellow.

Cattleya Snowflake, raised between C. Düsseldorfei Undine (intermedia alba × Mossiae Wageneri) and C. labiata alba, is a grand flower, and the largest of the Düsseldorfei hybrids, the petals expanding to nearly seven and a half inches. The whole flower is of fine substance, pure white, with a slight sulphur-yellow shade in the centre of the lip.

Odontoglossum eximium Copper Queen is a very large flower of model shape, with a new tint of colour. The sepals and petals, which are nearly equal in width, bear one large and several smaller blotches of a bright copper-red colour, which show through to the backs of the segments, the margins and tips being white tinged with purple from the colour on the reverse side.

HYBRIDS FROM SLOUGH.

Messrs. Flory and Black, Slough, send the first flowers of the following three new hybrids:—

Sophro-Laelio-Cattleya Margrand (Marathon × S. grandiflora), a pretty and neatly formed flower with strong features of S. grandiflora, which has been twice used in its production. The sepals and petals are copper-yellow, with darker veining; the lip is bright yellow striped and tinged with red.

Sophro-Laelio-Cattleya Phryne (L.-C. Phryne × S.-L. Gratrixiae) has clear yellow flowers with rose-coloured markings on the front of the lip, a peculiarity being the Cowslip odour derived from Laelia xanthina in the old Veitchian hybrid L.-C. Phryne.

Brasso-Laelia Jasper (B.-L. Jessopii × Laelia harpophylla) scarcely attains the merit expected in a Brassavola hybrid in point of size, its form, and elongated, recurved lip, being dominated by L. harpophylla. The lanceolate sepals and petals are bright chrome-yellow.

PLANT NOTES.

SALVIA DICHROA

SALVIA DICHROA (fig. 56) is one of the most beautiful of outdoor Salvias, but it is somewhat tender, and must be grown in a sheltered position. In the Cambridge Botanic Garden it has been very beautiful on a border facing east, against the low wall of one of the plant houses. The species is not common in cultivation, but is not new, having been introduced by Mr. George Maw, of Crocus fame, in May, 1871. The plant flowered in his garden at Broseley, in Shropshire, in August of the following year, and was figured in the *Botanical Magazine*, tab. 5964. The species is allied to S. bicolor, which is bright blue in colour, while S. dichroa, also largely blue, has a white central lobe to the lower lip. In *Index Kewensis* S. dichroa is referred to as S. bicolor, but there are considerable points of difference. The radical and lower leaves of S. bicolor are deeply cordate, sinuate-toothed, and much cut, with spreading teeth and lobes, while those of S. dichroa are oblong-acute at the base, irregularly cut into large obtuse lobules that point to the apex of the leaf. In S. bicolor the hairs of the stem are spreading, whilst those of S. dichroa are reverted.

The plant grows from 2 to 3 feet high, and the leaves are usually from 6 to 8 inches long. The corolla is 1½ inch long, bright blue in colour, the lower lip of the same "tint" as the upper, and three-lobed; the lateral lobes are rather oblong in shape and rounded, the central white lobe being orbicular, concave, and pendulous.

The plant was collected by Mr. Maw at the base of the Greater Atlas, south of the city of Morocco, at about 2,000 feet below Tasmeroot. The cultivation of this plant is not difficult, and it may be increased by division in the same way as most herbaceous Salvias, also from seed.—*E. Irwin Lynch.*

THE ROSARY.

USEFUL ROSES

THE points of a good Rose so ably laid down by *White Rose* on p. 64 deserve more than a passing notice. His first and last points deserve most attention from raisers of new Roses, but all the eight qualities he refers to are to be desired in Roses of the future.

There are varieties that I consider conform to the standard of form and colour to be looked for in the ideal Rose. These are Catherine Mermet, Maréchal Niel, Hugh Dickson, and Frau Karl Druschki, in their order of merit. I am well aware that only in very warm, sheltered gardens are the two first named a success. Papa Gontier is the very best Rose for dwelling-room decoration. The blooms may be cut with long stems, whilst the colour and length of petal are not equalled in any other Rose. I have had the best success with this variety on limestone, and the plants grow vigorously for years if not pruned too hard. Papa Gontier, The Bride, from plants under glass, and Hugh Dickson grown in the open, with American Pillar grown on poles, are four of the most effective Roses for indoor room decoration.

Kaiserin Augusta Victoria is fine for the dinner table. The beautiful medium-sized blooms and erect stems are qualities in its favour. A pink and red variety of the same habit but more robust would be an acquisition.

Lady Roberts makes a fine buttonhole Rose when it develops that lovely bronze tint seen in some of the blooms, but the colour varies with soil and season. Many Roses of the H.T. section are useful as cut flowers, and most of them as garden Roses for summer and autumn.

Mr. Mawley was a wise man (p. 92) not to name 12 Roses for any garden outside his district. Here is my list:—1, Caroline Testout; 2, Frau Karl Druschki; 3, Hugh Dickson; 4, Mme. Abel Chatenay; 5, Pharisaer; 6, Captain Hayward; 7, Mrs. John Laing; 8, Antoine Rivoire; 9, Mrs. Foley Hobbs; 10, Juliet; 11, Duchess of Wellington; 12, General McArthur. 13, Anna Olivier; 14, Lady Roberts.

Certain varieties are best worked on a free-growing odd variety of the Seven Sisters type of Rambler. For example, Gloire de Dijon, on the Seven Sisters type of stock, is deeper in colour and the blooms have more substance.

Some of the newer Roses have fewer petals than those of 30 years ago, which is a distinct gain. Captain Christy and Climbing La France are charming flowers, but having too many petals the blooms do not open in the absence of plenty of sunshine and warmth.

Some Roses are best grown on what may be termed the extension system, that is, tying them to stakes from 3 to 5 feet high. Many Roses are ruined by being cut back too severely. The first year I train the shoots to one stake; then, as the plants get larger I use two or three stakes, and by this means obtain more flowers for cutting and the bushes live longer. I consider this method better than standards, "Bouquets on broomsticks," as Jean Sisley used to call them. Marie van Houtte, Mrs. J. Laing, Hugh Dickson, Mme. Lambard, Anna Olivier, and many others are suitable for this treatment.—*Rosa Rubra.*

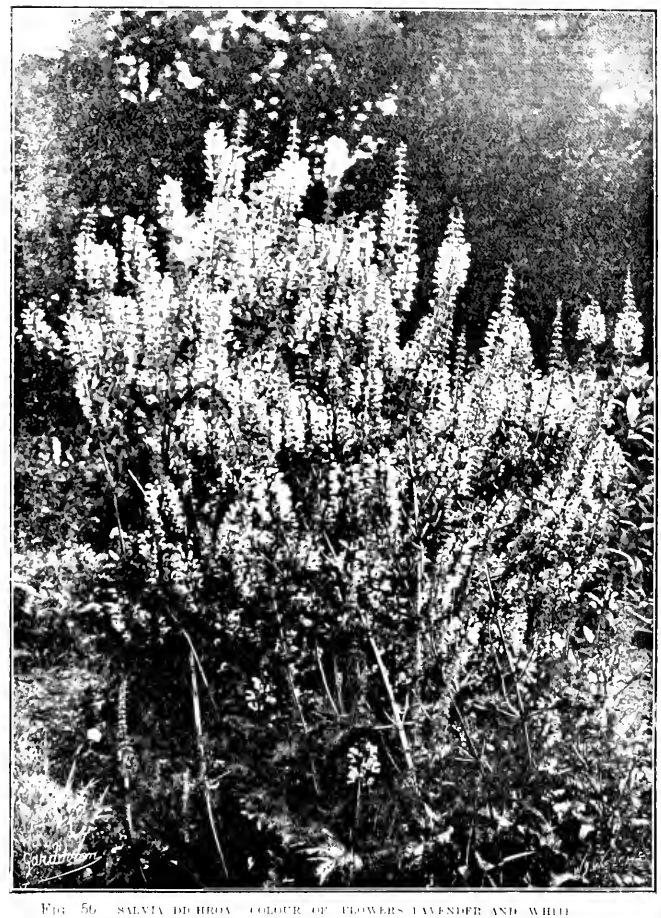

FIG. 56.—SALVIA DICHROA: COLOUR OF FLOWERS LAVENDER AND WHITE.

FRENCH NOTES.

COLUMNEA HYBRIDS

IN supplement to Mr. Lynch's interesting notes (February 16, 1918, p. 64), mention may be made of two hybrid Columneas raised in France, both with *C. magnifica* as one parent.

The first, *C. Lemoinei*, was raised at Nancy from a cross with *C. glabra*, and was put into commerce by Lemoine in 1914. The other, *C. Vedrariensis*, was obtained in 1915 at Verrières by M. A. Gentil, Andrieux and Co., and resulted from a cross between *C. Schiedeana* (♂) and *C. magnifica* (♀). As an ornamental plant the hybrid is superior to either parent. It has the habit of Schiedeana and also the floral striation and form. From the other parent it derives bright colour and size of flowers, and also its villous habit. In vigour, the dimensions of its branches and foliage, time of flowering, the colouration of the undersides of the leaves and that of the veins, the hybrid is intermediate between the two parents. The reciprocal cross with *magnifica* as the female parent resulted in similar but less vigorous plants, a fact which is not infrequent, and indicating that a hybrid takes after the female plant in respect to vigour.

Columnea Oerstediana, discovered in Panama by Warscewicz in or about 1850, was not introduced into cultivation by Lemoine until 1906, the species having been rediscovered in that

year at Costa Rica by C. Werckle. It is described in Messrs. Lemoine and Sons' current catalogue as a fine subject for growing in baskets, with long, pendent shoots bearing scarlet flowers.

A dozen species of Columnea have been described in *Bot. Mag.*, the prettiest being undoubtedly C. gloriosa Sprague (*Bot. Mag.*, t. 8,378). This species was introduced to Kew in 1909 from Costa Rica.

Columnea erythrophoea Decaisne, which was figured in *Revue Horticole*, 1867, p. 172, resembles, according to the plate, and except that its flowers are not striped, the hybrid C. Vedrariensis. *A. M.*

A WAY WITH BADLY GERMINATING SEEDS.

IN a paper dealing primarily with certain phenomena of mutation in Oenothera biennis, de Vries has recorded some interesting observations on the germination of seeds in this genus.*

The small seeds of the Evening Primroses are notorious for a high proportion of failures to germinate. In some of the forms, such as Oenothera Lamarckiana, this sterility has been shown to be due in part to the fact that about one-half of the embryos are so constituted hereditarily that further growth is not possible. Their make up at fertilisation is such that they are doomed to perish early. This, however, accounts for only 50 per cent. of germination failures, where as the actual failures frequently reach 80 per cent. or even higher. Again, among those that are successful germination is often very irregular. Some of the seedlings appear within a few days of sowing, others will take weeks or even months, while some of the seed may remain dormant for years. At first it seemed possible that this might be due to the hardness of the seed-coat, and de Vries had some tests made with one of the filing machines used at Svalöf for small, hard-coated seeds. The results were negative, owing apparently to the fact that the hard layer of the seed-coat in the Evening Primrose is not the external tissue, but that of the inner integument. The softer outer coat prevented the filing of the harder portion inside. Another possibility then presented itself to de Vries. Might it not be that the exceedingly small slits in the seed coat through which moisture is normally imbibed from the soil became full of air and penetrable only with great difficulty by water? To test this supposition de Vries thoroughly soaked his seeds, placing them in small tubes of water and keeping them over night at a temperature of 30° C. The tubes were then placed in an apparatus in which they could be subjected to a pressure of 6·8 atmospheres at room temperature for 1·3 days, the object being to force the moisture through the minute slits of the seed-coat. The result was eminently satisfactory, as may be judged from the following experiment with Oenothera Lamarckiana, in which over 3,000 seeds were used. It was found that 15 per cent. of these germinated by ordinary methods in the first two days, and a further 3 per cent. in the two following days. The refractory seeds were then placed for three days in water under a pressure of 8 atmospheres. After this treatment a further 23 per cent. of seeds germinated. The remainder were then carefully examined and their seed-coats broken with a needle. Only 5 per cent. of them contained embryos, and of these many were in a decaying condition. The result of the treatment was that over double the number of seeds were induced to germinate, the sum total being not far short of the 50 per cent. which recent work has indicated as the limit of germinable seeds in this type of Oenothera. Though it is hardly likely that the process will be applied on a commercial scale to the seed of the Evening Primrose, it clearly suggests research on interesting, and perhaps profitable lines, with seeds of greater economic value.

* *The Botanical Gazette*, Vol. LIX., No. 3, March, 1915.

The Week's Work.

THE KITCHEN GARDEN.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

FRAME CUCUMBERS.—Make a sowing of Cucumber seed to obtain plants for growing in pits or box frames. Prepare the manure and fallen leaves for making up the hot-beds, by turning and mixing the materials several times. Make the hot-bed 15 inches or 2 feet wider than the frame to permit of placing fresh fermenting material around the frame later when the warmth of the bed is declining. Place the frame on the bed, but do not put the soil in the former for a few days or until the temperature of the hot-bed is on the decline. Place a compost of turfy loam and leaf-mould in equal parts in mounds or ridges in the centre of each light, and add fresh soil to the roots as it becomes necessary. Set the plants out when they have made two rough leaves, choosing a warm day for the work. Syringe the plants lightly and shade them for a few days until the roots are established.

VEGETABLE MARROW.—Make another sowing of Marrow seed in 4-inch pots to obtain plants for setting in heated pits or frames. Abundance of air must be given on all favourable occasions, and the frames covered at night when there is frost. With careful attention the plants will furnish Marrows several weeks in advance of those in the open. The lights should be removed when the weather is warmer, and the plants will continue to bear throughout the summer.

SPRING CROPS. Use the hoe freely whenever the ground is dry enough for stirring. Dust the surface with soot or lime where slugs are troublesome. Cabbage and Winter Spinach especially will grow more freely when the soil is kept clean and stirred frequently.

LETTUCE. Spring sown Lettuce plants of early Cabbage varieties are making rapid progress in heated pits and frames. Ventilate the frames freely on mild days, and dust soot and lime between the plants to keep slugs away. Transplant seedlings raised from a successional sowing to maintain a regular supply of heads, and sow more seed of Cos and Cabbage varieties in boxes to obtain plants for growing on warm borders later.

PARSLEY.—Where the leaves of Parsley growing in frames have been picked rather closely stir the surface soil with a small hoe and remove all dead and decaying leaves to favour the development of fresh foliage. Sow seeds of Parsley in boxes to obtain plants in readiness for planting out later. Such plants will be valuable where Parsley out of doors has been injured by the winter or where the supply is likely to be short from any other cause.

PARSNIPS. Parsnips still in the ground are beginning to grow, and should be lifted, placed in a heap under a north wall and covered with fine soil. Manure the ground freely and dig it in readiness for future crops.

COLD FRAMES. Remove the lights daily on all favourable occasions from cold frames in which such seedlings as Cauliflowers and Winter Lettuces are growing. In this way the plants will get hardened and be ready for planting at the beginning of next month. The plants may be protected on cold nights by covering them with mats; the lights can then be used for forwarding more tender crops.

THE HARDY FRUIT GARDEN.

By JAS. HUDSON, Head Gardener at Gunnersbury House, Acton, W.

NEWLY PLANTED TREES. All planting of fruit trees should by this date be completed, even in late districts. Late-planted trees should be pruned fairly hard. It will be advisable to mulch the trees at once, and the roots should be well watered. Afterwards, if the weather be dry, the trees should be syringed on a few occasions, but when they commence to grow freely less attention in watering and syringing will be needed. See that the soil is made firm before a mulch is applied. Trees that were planted last autumn and this spring should receive attention; not much pruning will be needed, but in some instances it is essential to regulate the growth. Training to a proper shape is an important detail in the management of fruit trees at all times, but it is most necessary in the case of young trees. A wall of carefully trained trees does not fail to create an impression upon an observant mind as to the foresight and patience that have been bestowed upon the plants.

TRAINING OF YOUNG PYRAMID TREES.—Time should, if possible, be found to give some attention to the training of young pyramid trees. This type of tree should have a well-developed stem with lateral branches radiating from it of an equal vigour. Sometimes a branch becomes too large and spoils the balance of the tree. To obviate this depress all the growths from the outset, as by so doing excess of vigour will be prevented. A simply way to do this is to take old garden broom-handles, cut each one in two, and drive them as stakes firmly in the ground. The shoots may be secured to the stakes in a pendent manner. Five or six such stakes should suffice for each tree, and to this number the shoots may be tied down. In five or six years the lower branches will become quite set, and to these afterwards those of younger growth may be secured without any further need of the stakes. For tying use medium sized tarred string.

SPRAYING.—It is almost past the time for applying winter washes to fruit trees, for their use is not advisable when the flower-buds of Apples, Pears and Plums are swelling. If the Plum trees have been attacked with Plum aphis the pest should be destroyed directly it is detected, but specifics must not be used during the flowering period. It will be advisable to be prepared for an attack of caterpillars later. In many gardens last season caterpillars wrought much damage before it was possible to check them. It will be well to take the advice just issued by the Food Production Department and be prepared in time to combat this most harmful garden pest. Some prefer to use arsenate of lead, others nicotine and soft soap. Personally I am disposed to favour the latter specific. Lime-sulphur spray is now coming more into general use. It is a most efficacious remedy for many fungous diseases and insect pests. It is recommended for the destruction of big-bud in Black Currants, but I have not used it for this purpose.

PLANTS UNDER GLASS.

By E. HARRISS, Gardener to Lady WANTAGE, Lockinge Park, Berkshire.

FORCED SHRUBS. When shrubs that have been forced have finished flowering they should be pruned, repotted, or receive any other attention necessary. The seed-pods on Rhododendron indicum (Indian Azaleas) should be picked off, and should there be evidence of red spider on the foliage lay the plants on their sides and give them a vigorous syringing with an insecticide. Afterwards place them in a moist, warm atmosphere to make fresh growth, a vinery or Peach-house which has just been started being suitable. In summer the pots may be plunged in ashes in a sunny situation out-of-doors. Ghent Azaleas may be repotted if necessary and grown on for a few weeks in a house having a warm, moist atmosphere. At a later stage they should be plunged in ashes out-of-doors until they are again required for forcing. It is sometimes necessary to thin the growths of Azaleas, or the shoots may grow too weak to flower. Prune plants of Prunus triloba hard and place them indoors for a week or two, to start them into growth. Only sufficient shoots should be retained to form a good head. The roots may either be repotted or top-dressed as their requirements demand. They must be placed out-of-doors for the summer to ripen the flowering wood. Pyrus floribunda may be repotted or planted out in the open. Lilacs should be pruned severely and planted out in well-prepared ground. Deutzia gracilis, after being forced hard, needs a year in the open ground

to make suitable growth for forcing a second time; this will necessitate having two sets of plants in order to have good specimens for forcing every year.

FERNS.—The repotting of Ferns should be done now, but it may be remarked that Ferns will grow in the same receptacle for two or three years without disturbing the roots, provided the drainage in the pots is efficient. Worms are usually the cause of trouble in this respect, but they are easily got rid of by watering occasionally with lime-water. Cut off all old leaves and place the plants in a warm moist house to make new fronds.

HELIOTROPS.—Cuttings of Heliotrope may be inserted now to obtain plants for flowering in autumn. Insert the shoots in pans filled with sandy soil and root them in a propagating case. Standard Heliotropes are very effective for grouping, and will last for a number of years. For this purpose select some of the strongest of the young plants and grow them on in a moderately warm house. Keep all side growths removed till the plants have attained the desired height. Attention must then be given to forming the head.

PLUMBAGO ROSEA.—Old plants of this Plumbago may be repotted now. Shake out the roots and repot them in a compost of fibrous loam, peat, leaf soil, wood ash, and sand. A few cuttings may be rooted annually to replace plants that are worn out. This Leadwort needs plenty of warmth and moisture during its season of active growth, and it will grow well in a light position in the plant stove. Stop the young plants once or twice during the growing season to obtain bushy specimens.

BROWALLIA SPECIOSA MAJOR.—Seeds of this useful plant may be sown now in pans and germinated in moderate warmth. When large enough for transferring, shift the seedlings singly into 3-inch pots and again later into 5-inch pots. Pinch the growths of the plants to obtain bushy specimens. Another sowing may be made in a few weeks to obtain plants for successional flowering. The flowers are useful all through the summer and autumn.

FRUITS UNDER GLASS.

By W. J. GRAY, Gardener to Mrs. DEWHURST, Keele Hall, Newcastle, Staffordshire.

VINERIES.—Gros Colman, Lady Downe's, Black Alicante, Mrs. Pince and similar varieties of Grapes in late houses are swelling their buds much earlier than usual this season. The late vinery should therefore be closed early in the day to trap plenty of sun heat, and the atmosphere should be kept moist now that the house is warmer. Very little fire heat will be necessary until the buds are breaking into growth; still, it is advisable to warm the pipes on dull days and cold nights by opening the valves a little. If the borders appear to be dry, water them freely with tepid water, as at this date there is less danger of giving them too much than too little moisture. The house should be syringed twice daily and a moist atmosphere maintained until the vines are in flower. Black Alicante, Gros Colman and Lady Downe's require plenty of time to finish their berries; it is therefore necessary that these varieties should be started in plenty of time to give them the full benefit of the season, otherwise the berries will not ripen by the middle of September, which means extra firing to finish them, apart from destroying their keeping qualities through the winter. The same treatment as advised for late vineries will be suitable for houses containing such varieties as Foster's Seedling, Buckland Sweetwater, and Madresfield Court, which can be grown in a mixed house with excellent results. The temperature of the vinery should range from 60° at night, with a little air admitted through the top ventilators to 65° on warm, sunny days. The changeable weather at this period will make it necessary to reduce the ventilation, as the sun loses power in order to raise the temperature a few degrees in the afternoon. If syringing of the vines has been discontinued, all bare spaces should be damped twice a day. Syringing the bare spaces with weak soot-water twice or thrice weekly has a beneficial effect on the foliage. The young laterals into position gradually; pinch out strongest shoots, and allow the weaker ones to grow unchecked for a little longer where space remains unfurnished. If insect pests are not be troublesome at the present stage, steps must be taken to exterminate them directly they are detected.

LATE STRAWBERRIES.—The exceptionally mild weather has caused the latest batch of Strawberries to grow freely, and the plants should be fully exposed to the air. If the pots are plunged in ashes the roots will not require water every day, but they must not be allowed to become dry, for even late plants are becoming active in growth, and drought would cause a serious check. Mildew spreads rapidly on pot Strawberries, and, as prevention is better than cure, it is advisable to immerse the plants in a mixture of soft soap, sulphur, and water, before they are removed to the houses. Dry sulphur may be dusted between the plants in frames.

THE ORCHID HOUSES

By J. COLLIER, Gardener to Sir JEREMIAH COLMAN, Bart., Gatton Park, Reigate.

CALANTHES.—The deciduous Calanthes are largely used for cutting during the autumn. The plants may be grown with good success in cool greenhouses. I have frequently seen good specimens in Mr. Cowley's and Mr. Ingram's collections, which were grown in cool greenhouses. The plants require a moderately warm temperature to start into growth, but they will succeed in the majority of greenhouses. Repotting should be done [illegible] Pots are to be regarded as [illegible] not divided roots and [illegible] the previous year's [illegible] and more [illegible] must be made. The compost should consist of fibrous loam, leaf-mould, and [illegible] and be well drained, each one will accommodate three or six pseudo-bulbs of average size. If preferred, the pseudo-bulbs may be potted singly in small pots. Keep the base of the pseudo-bulbs at least half an inch below the rim of the pot, with the young shoot resting on the surface of the soil, but in no way covered. Press the compost moderately firmly around the base of the pseudo-bulbs. Recently potted plants should be grown in a temperature of 65° to 70°. Very little water will be needed for the first six weeks; an excess of moisture would cause the tips of the young growths to turn black and thereby impair the health of the plant for the rest of the season. When the new roots have grown freely in the compost and the leaves begin to unfold, the amount of water may be increased, and from thence onwards the soil must never become dry. Plenty of light is necessary short of scorching the foliage, and the plants and surroundings should be kept moist. Healthy, back pseudo-bulbs that were removed may be used for purposes of propagation. Arrange them on a layer of Sphagnum moss in a shallow receptacle, and place them in a warm, moist house, where they will quickly produce new growth.

MILTONIA.—Plants of Miltonia vexillaria or the elegant flower-spikes from the partly developed pseudo-bulbs. Guard against attack of thrips, which, if not kept in check, will attack the tender flower-buds, causing them to become deformed. The foliage should be syringed on bright days, which will not only keep down thrips, but also be beneficial to the growth of the plants. The syringing should be done sufficiently early in the day for the foliage to become dry before night arrives. The house should be carefully fumigated on frequent occasions with a vaporising compound. The above remarks apply also to such hybrids as M. Bleuana and M. Charlesworthii. M. Roezlii should be [illegible] in the shadiest part of [illegible] house, while M. vexillaria and its hybrids, as also M. Phalaenopsis, may be grown in the intermediate [illegible] and [illegible] at all times from bright sunshine.

THE FLOWER GARDEN.

By E. BURRELL, Gardener to the Earl of [illegible], Tyninghame, East Lothian.

GOLDEN YEW.—Prune Golden Yews now, in order that plenty of young, yellow shoots may be produced during the summer and autumn months. This pruning, with a pair of hedge shears is [illegible] carried out, but where either hedges or single specimens have become overgrown, this should be done more than hand work. The same [illegible] should be followed with other hardy evergreens of coloured foliage.

DAHLIAS.—Dahlias are easily propagated from cuttings, which are produced in plenty from strong shoots pushing from the crown. The old stools should be placed in a warm house, the tubers being merely covered with leaf-mould or other light material.

LAWNS.—Grass lawns should be well swept, rolled with a heavy roller if needed, and then mown, if required, twice, the first time with the knives slightly elevated, the second time set at their usual height. Portions of grass land which are cut by hand mowers, if at all rough, may be mown with the scythe once and then run over with the machine. Our hand mowers are operated by women working at short intervals, and it is imperative that the work be never allowed to become heavy for female labour. It takes [illegible] on the whole, to mow frequently, and, in consequence, is better for the appearance of the lawn, while the condition of the machines themselves is at present a matter of great consequence, repairs and new parts being increasingly difficult, and light running being one way of obviating breakdowns. Worms in grass are a nuisance, necessitating much extra labour in cleaning up their casts. They may be destroyed by lime water, which may be prepared as follows: To 1 lb. of unslaked lime add 7 lbs. of water, and when the lime is thoroughly slaked, or reduced to powder, add 5 gallons of water, and so on in proportion. Apply the lime water to the lawn by means of a rose watering pot: the worms will duly appear on the surface, to be finally swept up. If the soil is moderately moist less lime water will be required than if dry.

FORCED DAFFODILS.—Bulbs of Daffodils that have been forced are useful for planting on grass, and may be grassed at any convenient time. Strike the bulbs free from soil and arrange them in any haphazard method on the surface of the lawn, then, with a spade, make a slit wide enough to allow of the roots and bulbs to be properly buried; withdraw the spade and press the edges of the slit together, and the operation is completed. Much trouble and labour will be saved if the bulbs are planted as the flowers are cut, and I have never found that the Daffodils suffered, at least to any appreciable extent.

THE ROCKERY.—Whatever is needed in the way of replanting may now be done, such as of cuttings which have recently been rooted or plants raised from seeds sown last year. Use a little fresh compost in the sites to be planted; a stone or a few stones embedded around them will be an effective substitute for a mulch. This will be an effective time to prune Alpine Roses, varieties of Buddleia variabilis (to be cut down), Hydrangeas, Clematis of the Montana section needing restriction, Vincas (Periwinkles), and others getting out of bounds. If Muehlenbeckia complexa has been frosted it should not be hastily removed, as I have seen a very badly frozen clump make new growths after a time. The Alexandria Laurel and Parkinson's variegated Sage may also be damaged by frost, but these plants will probably break into growth again.

THE BOG GARDEN.—Stones in the bog garden occasionally need to be raised to assure a proper footing. Weeds that may have escaped detection last autumn should be eradicated. Phyllostachys or other hardy Bamboos are almost certain to have been frosted, but though the leaves may drop the canes are not always killed, and accordingly they should not be cut over until it is certain that they are killed.

EDITORIAL NOTICE.

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

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

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

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.*

APPOINTMENT FOR THE ENSUING WEEK.

SUNDAY, MARCH 24—
Summer Time commences.—Clocks to be put forward one hour at 2 a.m.

TUESDAY, MARCH 26—
Roy. Hort. Soc.'s Coms. meet.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 43.0.

ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, *Thursday*, March 21, 10 a.m.: Bar. 30.4, temp. 48.6°. Weather—Fine.

Fruits for Acclimatisation

There are no publications more interesting to the breeder and acclimatiser of plants than the periodical descriptive lists which are issued by the U.S. Bureau of Plant Industry. That branch of the Department of Agriculture lays the whole world under contribution, and provides for the horticultural experimenter a rich supply of promising material.

In scanning the present list,* the thought comes insistently to the mind that what the United States is doing for the American horticulturist might and should be done—when the strain of war is past—by the British Empire for the horticulturists of the Empire.

Consider for a moment one group of plants only—the fruit trees and shrubs—the list under notice contains descriptions of seven Almonds from Spain, the Caucasus, and Turkestan; twelve Peaches and Nectarines from China, Turkestan, Spain, N.W. Frontier India, and Korea. (One of the Peaches enumerated, the Sutter Creek Peach, of good quality and large size, is of special interest in that it is remarkably resistant to Peach curl); 12 Apples (Malus sylvestris) from the Caucasus and Turkestan; 8 Apricots (Prunus armeniaca) from China, Manchuria, and Russian Turkestan; and also Plums and Plum hybrids and many Pears, including a large number of varieties of the Chinese Pear, Pyrus chinensis.

Of the many varieties of these several fruits not a few might be valuable in this country and in other parts of the Empire, and it should not prove either very difficult or very costly to establish a headquarters station with outlying stations in relation with it where systematic testing of new and promising varieties could be undertaken.

At the recent conference of fruit growers other and more pressing subjects naturally engaged the attention of the experts, but nevertheless this is a subject which undoubtedly should be kept in mind by all who desire to secure yet further improvement in our fruits. If steps were taken to establish a central station for the study of problems relating to the improvement of fruits, and if the existing institutions already engaged in this subject were in one way or another affiliated with the central station, the larger scheme which we have in mind, that of a Federation of similar institutions throughout the Empire, might grow out of it. Naturally, however, the essential business of the conference held at the Guildhall on February 22 last was to consider the subject of fruit-growing in this country, and to devise means whereby the fruit-growing industry may be strengthened and extended at home.

* *New Plant Introductions.* Seventh annual list, 1917-18. Bureau of Plant Industry, U.S. Dept. of Agriculture.

DESTRUCTION OF A VETERAN PALM.—The *Revue Horticole* for March contains an interesting account of the tree of Phoenix canariensis on the isle of Teneriffe, commonly called the "Palm of the Conquest" on account of its being said to have existed there prior to the conquest of the island by the Spaniards. As this event took place in 1496, the tree appears to be over five hundred years old. The tree was destroyed by a gale on January 3 last, which broke the trunk in two. The Canary Islands were formerly thickly wooded, principally with Palms and Conifers.

DRIED POTATOS IN GERMANY.—The drying of Potatos for use during the winter and early spring has, according to the *Journal de la Société Nationale d'Horticulture de France*, long been practised in Germany, as being a more economical way of keeping the tubers than in their natural state. Drying prevents loss, such as arises from "blackening," sprouting, and sweating, as well as rendering the stock less bulky, and therefore easier to dispose of in a small space. Moreover, dried Potatos are more digestible than fresh ones, the water they normally contain being a hindrance to assimilation; all farm animals prefer them dried. The practice had become so common in Germany in the last few years before the war that already in 1914 there were 433 factories engaged in the process.

WOMEN GARDENERS.—It is stated that between October and December the Swanley Horticultural College received 540 applications for women gardeners and farmers.

ALLOTMENTS.—In the week ending March 9 56 local authorities, acting on the advice of the Food Production Department, agreed to provide 9,009 new allotments, with a total acreage of 618¼. At the head of the list was Walthamstow, with 2,190 allotments and 146 acres, whilst Keighley, with 1,500 allotments and 100 acres, came next.

SODA CRYSTALS FOR POTATO SPRAYING.—The Food Production Department of the *Board of Agriculture* has arranged with the principal manufacturers of soda crystals to supply this product during the ensuing season at £4 7s. 6d. per ton net in 2 cwt. bags, delivered to any station in England, Scotland and Wales, in 5-ton lots. In large cities and other approved centres, lots of one ton and upwards will be supplied at the same price. For lots of less than one ton, orders should be placed with local dealers. The retail price of soda crystals sold from shop or store ought not to exceed the following:—56 lbs., 3s. 6d.; 14 lbs., 1s.; 7 lbs., 6d.; 1 lb., 1d. The demand for soda crystals can only be met by the manufacturers if orders are placed immediately and delivery accepted as and when facilities offer. Horticultural associations, farmers, allotment-holders and others should therefore make arrangements to combine their requirements, and to place orders at once with manufacturers or dealers for lots of one ton and upwards, and with dealers or retailers for smaller quantities. If any difficulty occurs in obtaining supplies, a communication should be sent to the Food Production Department, 72, Victoria Street, London, S.W.

THE SUPPLY OF SOFT SOAP.—The Food Production Department has arranged that a sufficient supply of soft soap shall be available this season for fruit spraying, and the principal makers have been requested to give priority to demands which are stated to be for this purpose. Agricultural merchants who are in the habit of supplying fruit and Hop growers with soft soap for spraying, are recommended to place their orders with makers at once, in order that the soap may be delivered in time. Ample allowance should be made for delays in railway transport. Merchants and growers who experience any difficulty in procuring supplies of soft soap should communicate with the Food Production Department of the Board of Agriculture, giving particulars of the makers from whom their supplies are ordered, and the quantities required.

PRIZES OFFERED FOR A NEW NAME FOR THE JERUSALEM ARTICHOKE.—A frequent observer of the confusion of the work in the garden and kitchen caused by the misuse of the words "Jerusalem Artichoke" offers prizes for the best English name sent in by May 1 for this useful esculent. The prizes will consist of the following works:—*Trees and Shrubs Hardy in the British Isles*, *The English Flower Garden and Home Grounds* (last edition), *The Vegetable Garden*, by MM. Vilmorin Andrieux (English translation). The name must be one English word descriptive in some way of the plant, absolutely distinct from the present words "Jerusalem Artichoke." The name Jerusalem Artichoke it considered a corruption of the Italian Girasole Artiocco or Sunflower Artichoke, under which name it is said to have been originally distributed from the Farnese Gardens at Rome soon after its introduction in 1617. The plant is Helianthus tuberosus, a native of Canada and the Eastern States of North America. The judges are to be Sir FRANK CRISP, Miss WILLMOTT, and the donor of the prize. Names should be sent to Mr. W. P. THOMSON, 25, Bollo Lane, Chiswick.

HIPPEASTRUM RETICULATUM.—Hippeastrum reticulatum (see fig. 57), was introduced to this country from Brazil in 1777. The plant has leaves 2 inches broad, and peduncles a foot long, producing flowers in umbels of from three to five. The blooms are dull red, distinctly reticulated with lines of a darker shade, a whitish band down the middle of each segment, forming a sort of white star. A variety called striatifolium, introduced about the same time, differs in having scarcely any reticulating lines in the flower, and it has a line of white along the mid-rib of the leaf. The variety is more common in cultivation than the type, the leaves being more attractive, whilst the flowers are quite as showy. Dean HERBERT mentions imported varieties of H. reticulatum other than striatifolium, so that the species is evidently variable in a wild state. The same authority records a number of crosses which he raised from H. reticulatum, and it is possible that some of the plants are still in cultivation. Mr. ELWES has plants of reticulatum hybrids. Although not to be compared with the large hybrids raised by Lieut.-Col. Sir GEORGE HOLFORD and Messrs. JAMES VEITCH AND SONS, they possess a beauty that appeals to some tastes. Crosses between H. reticulatum and other species have been made at Kew, but the results

were poor. At Westonbirt, hybrids have been raised between Hippeastrum and Clivia, and the late Dr E. BONAVIA crossed Hippeastrum with Sprekelia. One wonders if the plants from these crosses ever flowered! A cross that would be valuable is Hippeastrum × Amaryllis Belladonna. HERBERT stated that whilst he found the species of Hippeastrum easy to cross, having raised at Spofforth no fewer than thirty-five different hybrids from them, every attempt to obtain a mule by the pollen of any other genus had failed. Yet where one may not succeed another may; attempts made at Kew to cross Begonia socotrana with the South American tuberous species failed, but a year or two later Mr JOHN HEAL was successful in obtaining hybrids from these parents.

is not far to seek, and your correspondent refers to it in the cutting away of the basal roots of the plants. Denuding the bulb of their roots is part of the system in vogue of preparing the bulbs for shipment, whether wittingly or unwittingly performed matters not—and while directly responsible for the losses of bulbs referred to, constitutes a piece of vandalism which cannot too roundly be condemned. Basal roots to a Lily bulb are a vital necessity if the plant is to become permanent, and cutting them away for any cause whatever is fatal to success. It is prosecuted in part, I believe, so that the bulbs may be the more conveniently moulded in moist clay prior to packing, the chief object of which is to keep them plump and fresh-looking till they reach

a result of it, finally

The Lily is one of those

production is, I believe, in the

That is to say, the formation of basal roots is

continuous, but rather restricted to a limited

In not a few Lilies then advent syn

the plant's maturity the moment

then the bulbs would be ready for harvesting.

the process of preparation for ship

sets of roots, new and old, are de

In this way the doom of countless

of bulbs has been sealed ere they

journey to this country. The

only remedy for this state of things is a system

bulbs which shall include the

retention

fibres. Failing this, it is

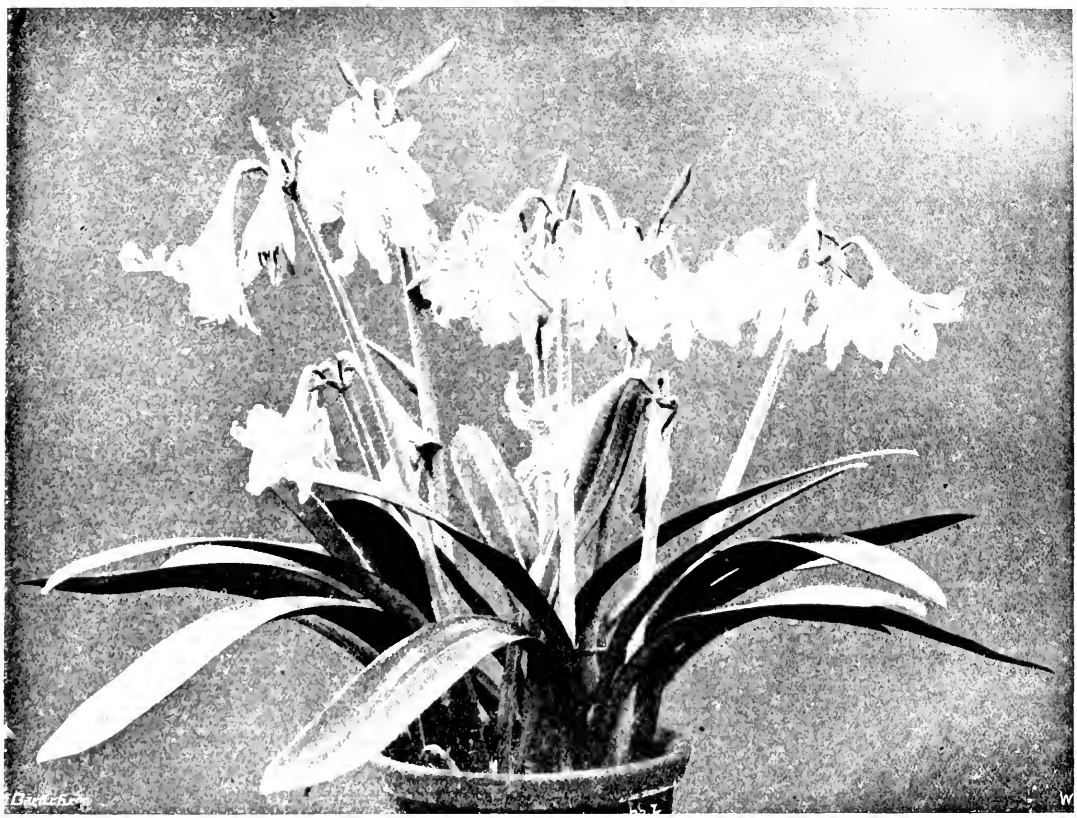

FIG. 57.—HIPPEASTRUM REGULIFLORUM.—COLOUR OF FLOWERS RED.
(See p. 126.)

BULB GARDEN.

HOME-GROWN BULBS OF LILIUM.

W. T. does well to direct attention to this subject (see p. 73), and the fact that so large a percentage of imported bulbs, more particularly the huge consignments that in normal times reach this country from Japan, refuse to become established in our gardens, should provoke food for thought for all Lily cultivators. Had but a tithe of those hundreds of thousands of Lily bulbs which, during the past thirty or forty years, have reached these shores become permanently established, our gardens to-day would be redolent of the fragrance of their flowers and endowed with a grace and charm still all too rare. The reason for failure

our shores. So far as it concerns the bulb, this might at least be avoided the not inconsiderable other part becoming a total loss in transit, decomposing, the rest, that is true. But better a thoroughly dried-up and somewhat shrivelled bulb, with its complement of basal roots intact, than one fresh-looking and plump at the moment of purchasing destined only to disappoint in the end, it may be to flower as the result of the production of much stem-root, or to collapse entirely as the flowering season approaches. For the shrivelled-up bulb with roots there is hope; for the other there is none. Slowly desiccating, the dried-up bulb may fail to flower in the year of planting, but supported by its roots is capable of "carrying on," of becoming permanently established. Bulbs without basal roots may flower if much stem-root is

for the Lily specialist at home to raise from seeds or scales, or both, stocks of the choicer Lilies, if not of all. Apart from these methods, bulbils—those at ground-level and below, as in L. auratum, L. speciosum, L. Henryi, and that much larger array, as in L. tigrinum and L. sulphureum, where they are produced high on the stem, being more distinctly aerial—are prolific sources of increase if they are watched. The first of those, those that come at ground-level and below, are, I believe, very much a question of circumstance, and to some extent may be increased at will. I say this advisedly, having in mind a large consignment received late from Japan years ago that had made considerable growth, 12 inches during transit. Useless for potting, the only method of planting them that occurred to me was that of excavating a bed, or throwing

out the soil to the right and left a few inches deep, and laying the growths flat upon the soil and covering them. To my surprise many flowered quite well though the greater surprise came at lifting time, when it was seen that axillary bulblets had been produced throughout the length of the buried portion of the stems, which terminated at ground level as usual. An interesting object lesson *per se*, it gave rise to the view that here, as the outcome of circumstance, was revealed a possible method of increase which, in the case of choice kinds, might be of value. In any case it is well worth the experiment. Garden Lilies of the calibre and permanent character of regale, Henryi, Hansoni, and excelsum, are, with others equally good, ever in request, and if in the above method a new string has been added to the Lily propagator's bow, there need be little fear for years to come of the supply of such good Lilies being in excess of the demand. *E. H. Jenkins.*

LILIUM BROWNII

MR. GROVE states (p. 110) that L. Brownii of gardens is quite distinct from any form sent from Japan within recent years. With this I entirely agree, and I received Lily bulbs collected in that country long before Mr. Wilson went east. The bulb of the old L. Brownii is quite distinct from any of the Chinese forms, and, in fact, from any other Lily, but in that respect this species is nearer to L. japonicum colchesterense. The early history of L. Brownii seems to be obscure, but it is generally recognised as having been named after Brown, nurseryman, of Slough, who sent it out somewhere in the thirties of the last century. In a catalogue of a prominent nursery firm for the year 1874, now in my possession, this Lily is priced at half a guinea each. Forty years ago I was engaged in an establishment where Lilies were a speciality. The bulbs of L. Brownii were obtained from Holland, and most of them were fine, plump specimens. Later, a large number of bulbs sent from Japan and sold in the auction rooms as L. Brownii proved in many cases to be colchesterense. Up to the early years of the present century the Dutch bulbs of L. Brownii left nothing to be desired, and after that my experience of them ceased. The nomenclature of the Lily known as L. japonicum colchesterense, or colchesteri of the *Kew Hand List*, is a puzzle to me. Lilium japonicum is now regarded as the correct name of the Lily so long known as L. Krameri, and is certainly widely distinct in flower, bulb, and habit from colchesterense. To emphasise this point still more, it may be pointed out that L. rubellum, which a superficial observer might well pass over as japonicum, syn. Krameri, seems to be assigned specific rank without question. During the fifty years or thereabouts that I have known L. Brownii it has never varied in the least, so that the fact of it having altered under cultivation is difficult to imagine. It is strange that so little should be known of the origin and early history of two of our most beautiful Lilies, namely, L. Brownii and L. testaceum. *W. T.*

ON INCREASED FOOD PRODUCTION.

WINTERING SEEDLING CAULIFLOWERS

THOUGH the raising of Cauliflowers in autumn and wintering the plants in cold frames or glass houses is a very old practice, it is to be recommended in preference to the raising of seed in

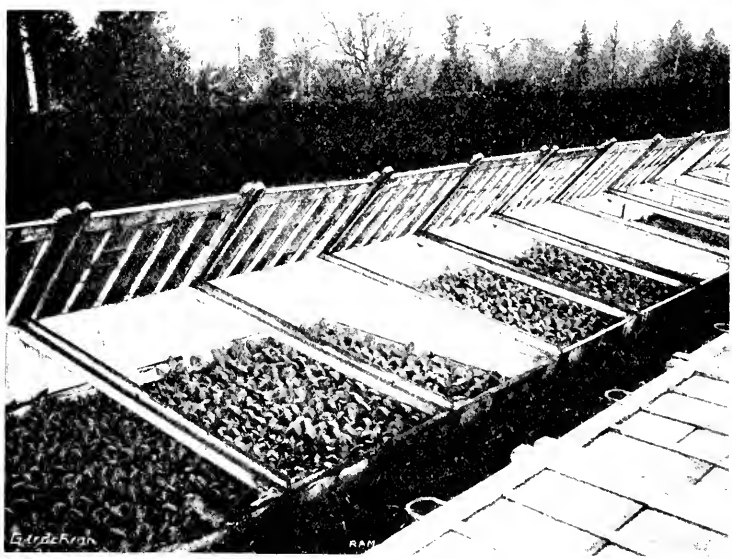

FIG. 58.—CAULIFLOWERS WINTERED IN COLD FRAMES.

early spring, as is now frequently done with some of the quick maturing varieties. The advantages are that the plants give much less trouble, produce far better heads, and, by selecting some of the strongest specimens, if suitable varieties are cultivated, they may be lifted in mid-winter and either potted in 8-inch pots singly, planted in suitable boxes, three or four in each, or in pot-like frames on mild hot beds, to produce succulent curds during April and May. Magnum Bonum and Early Forcing are amongst the best varieties for this purpose. About the end of March and during April the remainder of the plants may be planted out in various aspects in the garden for prolonging the supply. The illustration in fig. 58 shows the plants in these gardens in cold frames, the lights of which are removed on all favourable occasions. The varieties I most favour are the two above mentioned, and Walcheren and Snowdon.

The illustration in fig. 59 depicts a batch of Cauliflowers Magnum Bonum and Early Forcing potted in mid-winter, established in a cool vinery prior to introducing them to a mild heat for producing early heads. The plants are top-dressed with a rich compost and kept well supplied with manure-water. *Edwin Beckett, Aldenham House Gardens, Elstree, Hertfordshire.*

THE MARKETING OF SURPLUS PRODUCE.

I AM pleased to see that attention is drawn on p. 102 to the importance of marketing surplus produce from allotments and to the better use of vegetables than has hitherto been the case. The Food Production Department recently held a conference in London on the subject, at which I attended as a delegate from this county.

The establishment of markets in town centres has come of late under the consideration of the County Council of this county. The Agricultural Committee has recently formed a special sub-committee to formulate a scheme of markets to be supplied by the aid of motor transport from areas within twenty miles of such markets.

As a member of this committee I have taken part in deliberations on these lines, and we hope in the near future to bring the consumer and the producer closer together without the aid of the middleman, knowing so well as I do through living in the country that huge quantities of vegetables are wasted yearly solely through lack of transport and sale. By the scheme in hand we hope with our own auctioneer to sell all goods direct to the consumer, if they so wish, for their full value. Even if consumers do not purchase direct, so long as the producer is able to realise full seasonable value we feel we shall have done some good to the community. Such a scheme in full working condition will encourage growers, whether they be amateur or professional, to cultivate more extensively than in the past, and if at times prices are low owing to the laws of supply and demand, we shall be pleased if dwellers in towns obtain an advantage.

The goods are not intended to stop at vegetables and fruit. Such produce as tame rabbits, poultry and eggs will be included.

I agree, too, with your remarks on the cooking of vegetables and the employment of a greater variety of vegetables. How often are such crops as Leeks, Celeriac, Spinach, Jerusalem Artichokes, Beet, Seakale, or Tomatos found in cottage gardens, in addition to the ordinary crops? *E. Molyneux, Swanmore Park Farm, Bishop's Waltham, Hampshire.*

HOME-GROWN FOOD FOR POULTRY.

A good poultry food, which may be grown in many odd corners, will be obtained by sowing Buckwheat; the price of this seed last season was prohibitive. Linseed, which is now very expensive, may be grown in small quantities for home use, and it will form a valuable food for all kinds of stock. It is a profitable crop on newly broken land. In 1911, from plants raised from seed sown in a newly-planted orchard between rows of standard Apple trees, we obtained a good crop of seed, on soil which had been dug two spits deep, without adding manure. Sugar Beet, sown in the same orchard, and given two light dressings of agricultural salt, without any nitrate of soda or sulphate of ammonia, showed, on analysis, a sugar content of from 16-18 per cent. *J. E.*

FRUIT REGISTER.

APPLE KING OF TOMPKIN'S COUNTY.

THE valuable late dessert Apple King of Tompkin's County is of American origin. The tree is strong and free in growth, and makes a good specimen as a bush. The foliage is vigorous and leathery in texture, and is in consequence less susceptible than many sorts to attacks of fungous diseases. Spurs form evenly, but not too thickly, along the branches, and the tree seldom fails to carry a good crop. In these gardens it is one of the most consistent croppers amongst dessert Apples. The fruit is very bright, of good shape, and brilliantly coloured on the side facing the

sun, the shaded side being deep yellow. The flavour is excellent. On young trees the fruits are apt to be somewhat large for dessert purposes, but as the trees become older and of less exuberant growth they bear heavier crops of medium-sized Apples. At the present time the larger fruits are very valuable for culinary purposes. They have a pleasant flavour when cooked, and require little if any sugar to sweeten them. *T. E. Tomalin, Bessborough Gardens, Piltown, Co. Kilkenny*

NOTES ON MANURES IN MARCH.*

Ash Pit and other Residues

In view of the shortage of nitrogenous fertilisers inquiries are being made by a number of correspondents as to the possibility of utilising ash pit residues and similar waste products as fertilisers. From samples and analyses that have been submitted it appears that these residues can without great difficulty be worked up to contain about ½ per cent. of nitrogen and of potash and about 1 per cent. of phosphate. It must be admitted that the material is not of great value in spite of the noxious smell some samples possess; no fertiliser, however, ought to be judged by its smell. Ash pit residue is cheap, and can be obtained in large quantities. On heavy land it has advantages over and above its fertiliser content, for it tends to lighten the soil and make it workable. It is to be purchased for about 5s. per ton [illegible] getting. Allotment holders [illegible] find it useful.

Slaughter House Residues

In large cities some provision, though in many ways very much is made for the collection and utilisation as manure of slaughter house residues, but in smaller places the provision is very slight, and in many cases non-existent. An ordinary small township of 10,000 inhabitants, where say 600 bullocks and 1,200 sheep are slaughtered each year, should produce something like 20 tons of blood per annum and about 10 tons of other wastes of manurial value, which, if dried down and well ground, would work up into 2 tons of high grade dried blood, 1 ton of high grade meat meal and 5 tons of lower grade. These quantities are not great in themselves, but in the aggregate they are considerable. In any case, farmers or allotment holders able to secure such wastes should do so, and add them to the manure heap. A number of other wastes are obtainable from slaughter houses, and might be utilised as manure.

Sewage Sludge

Although sewage sludges are usually of no great fertilising value, they often are of some use, and when they can be obtained for nothing or at a nominal rate they may be distinctly worth collecting by allotment holders and farmers. It is a great mistake to attach any exaggerated value to them, but it is an equal mistake to ignore them altogether. Some sludges contain a good deal of lime; others a fair proportion of organic matter, although there is nearly always a large amount of water. The weakness of most of them is that the nitrogen is not easily available. Before making much use of them it is well to have analyses made.

Bonfire Ashes

Now that hedging and threshing are going on a certain amount of waste vegetable material is being burnt, and it is well to remember that the ash of this material is fairly rich in potash, of which it contains as a rule about as much as kainit. The quantity of ash available is not great, but it is valuable on light soils. In such cases a little potash goes a long way.

Catch Cropping and Green Manuring

The solution of the manure shortage is to go in for as much green manuring and catch cropping as possible. Catch cropping provides extra food for animals, and this means extra manure. Clover, Sainfoin, Vetches and Lucerne not only increase the bulk of the manure of animals to which they are fed, but they also enrich it, and their residues when ploughed into the soil add greatly to the stores of soil fertility. In districts where the second cut of Clover is apt to be poor, and where for any reason Clover seed is not readily produced, it is well to consider the advisability of ploughing up the ley directly after the first cut, and giving a bastard fallow in preparation for the succeeding corn crop. This method is practised with considerable success in certain farms in Hertfordshire.

Manuring for Potatos

In a trial made at Home, East Suffolk, a plot dressed with farmyard manure only gave a yield of 11 tons per acre, while one receiving dung and artificials, 2 cwt. sulphate of ammonia and 3 cwt. bone superphosphate per acre, gave the extraordinary crop of 26 tons per acre—one of the heaviest recorded in field trials. A third plot received in addition 4 cwt. of salt. But in this case the yield was depressed, being 14 tons 11 cwt. in place of 16 tons 6 cwt.; further, the tops showed that the salt had caused injury. The Cockle Park experiments have indicated that in the North of England a suitable dressing for Potatos is 12 tons of dung, 3 to 4 cwt. high grade basic slag, and 1½ cwt. sulphate of ammonia per acre; the dung is spread in the split drill, before planting, and the slag and sulphate of ammonia carefully distributed on the top of the dung before closing the drills.

* *Journal of the Board of Agriculture*, Vol. XXIV, No 11, February, 1918.

FIG. 59.—CAULIFLOWERS WINTERED IN A VINERY. (See p. 130.)

HOME CORRESPONDENCE.

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

THE ORGANISATION OF ALLOTMENT HOLDERS. Allotment holders are being urged on all sides to form themselves into societies, or associations, for the joint purchase of their requirements, the sale of their surplus produce, and the co-operative renting of land and owning of implements. The Agricultural Organisation Society has formed an Allotments and Small Holdings Department under the direction of a committee of which I am chairman. The one [illegible] of this Department is to [illegible] present [illegible] to organise themselves [illegible] any body of holders of allotments or small holdings which needs advice or [illegible] starting a society, or information as to [illegible] manage one for the benefit of its [illegible] can readily obtain such advice and [illegible] by writing to the head office of the Agricultural Organisation Society, Queen Anne's [illegible] Bell Street, London, S.W. 1, or [illegible] county branches. A useful booklet [illegible] issued by the Agricultural Organisation [illegible] containing how to form and work [illegible] and containing specimen [illegible] form of account book, model by-laws [illegible] useful hints in the management [illegible]. A set of leaflets dealing with the advantages [illegible] co-operative land renting and legislation [illegible] description of the work of Societies, can be obtained on application. Model rules for societies [illegible] to those desiring to register under the Industrial and Provident Societies Act and to the model rules to be [illegible] are also to be obtained on application. The Allotments Department of the Society has prepared a leaflet giving full particulars as to how a co-operative piggeries scheme can be worked successfully. The Agricultural Organisation Society, being the officially recognised body for the furtherance of co-operative methods in food production, is in close touch with all the Government Departments concerned, and its services are at the disposal of allotment holders free of charge. At the present moment some 400 allotment societies, with a membership of over 60,000, are in affiliation with the Society. It is difficult to over-estimate the value of this co-operation in food production; it is at once a real help to the individual members and a source of strength to the country as a whole. *F. D. Acland (formerly Parliamentary Secretary to the Board of Agriculture).*

UNDESIRABLE APPLES.—Mr E. Molyneux is doubtless right in asserting that lists of Apples could be profitably curtailed, but one would like to know where to begin. There are large numbers of Apples in cultivation, I suppose something like 3,000 varieties, and it must be admitted that considerable confusion exists as to the nomenclature of many old varieties. Certain varieties are peculiar to certain districts, at least that is my experience in Scotland, and one would require to think twice before discarding free fruiting sorts of good quality in favour

of varieties which thrive elsewhere and are recommended as a consequence. Take the Tweedside fruit-growing district as an example. There an Apple known as Melrose White is largely grown, and is greatly esteemed. And yet the name seldom appears in a modern catalogue. Knowing the qualities of this variety I should hesitate to recommend any modern Apple to take its place and it has been in cultivation in the Border Districts for at least a century. Advice upon discarding Apples can only really be of local value, and this fact applies more strongly to Apples and Pears than it does to almost any other kind of fruit. Mr. Molyneux, for instance, would discard Domino. A big fruit-planting scheme is now in process of completion in East Lothian, in connection with work for disabled soldiers, and the adviser of the Scottish Board of Agriculture recommended Domino as one of the Apples that should be planted. I have no experience of the variety, however, and can say nothing about it. So far as my own experience goes I would not discard Red Astrachan. It is consistently one of our best hardy Apples, and bears in abundance every season with me in East Lothian. My only difficulty is that it is regularly attacked by those excellent connoisseurs of quality in fruit—the wasps and birds. Nor yet would I discard Gravenstein. Here it is one of the finest of all Apples, and is a great bearer. It has rich, highly sugared, sparkling juice, whilst the aroma of the fruit is superb. The true King of the Pippins I would discard, for it is not equal to Golden Winter Pearmain, a variety usually regarded as synonymous with it, yet it is by far the finer fruit of the two. There are thus two stocks in commerce of King of the Pippins, and those fortunate enough to get the true Golden Winter Pearmain have no reason for complaint. The Apple is pre-eminently a British fruit, and it is most necessary that a list of varieties and synonyms should be compiled as soon as possible. That is where the value of Wisley will come in, but only in trials so far as nomenclature is concerned. It would be absurd, for instance, to say that because Melrose White or Red Astrachan are failures at Wisley that they must necessarily be failures on Tweedside or in East Lothian. *George M Taylor.*

PRUNUS PISSARTII (see p. 112).—At Hinton Admiral, Hampshire, trees of Prunus Pissartii are a magnificent sight—there are about 50 standards, some of them from 20 to 30 feet high, planted in one large clump, with Pampas grass growing underneath. The purple leaves are just opening, and the effect is beautiful; never before have the trees been covered with such a wealth of blossom. *J. C.*

STRAWBERRIES (see p. 113).—With reference to the remarks by Mr. Hudson on British Queen Strawberries, I have not tried the method he described with a main crop variety. For the past twenty-two years I have always planted Strawberries 2 feet apart and even more in the case of the stronger-growing sorts. Plenty of space between the plants facilitates the gathering of the berries, and also permits of working the soil to keep it loose on the surface and free from weeds. I do not advocate feeding plants growing in heavy, retentive soils until the fruits are well set, as I have known an excess of stimulants to cause some varieties to produce all foliage and scarcely any fruit; in light soils feeding would be an advantage in the early stages of growth. As regards making new plantations, it has always been my practice to secure all the early runners, both for forcing and planting out, by the middle of July, and to make the new plantations about the middle of August. By this system the plants form good crowns by the end of October. I have had individual fruits weighing 2 oz. from such plants the following year. It does not make any difference whether the garden is in the north or south; August is the best month to make new plantations and the ideal month to pot the plants for forcing. I have a batch at the present moment throwing strong spikes of flower. As regards Alpine Strawberries, including Black Prince and Givon's Late Prolific, the best method is to allow the plants to run wild and make new beds every two or three years. *Wm. Fulford, Delcor House Gardens, Aldenham.*

SOCIETIES.

ROYAL HORTICULTURAL.

Scientific Committee.

MARCH 12.—*Present:* Mr. E. A. Bowles (in the chair), Sir Everard im Thurn, Sir David Prain, Messrs. E. J. Allard, W. Bales, W. C. Worsdell and F. J. Chittenden (hon. sec.).

Curious Fruit from Palestine.—Mr. Worsdell said he had ascertained at Kew that the fruit which Mr. Bowles showed at a previous meeting was that of a species of Astralagus, near to A. macrocarpus. It was peculiar in the rattling noise made by the ripe capsules.

Mahonia with partially bipinnate leaf.—Mr. Bowles showed a leaf of Mahonia Aquifolium from his garden in which one of the leaflets had developed in a pinnately compound form with three leaflets.

An early-flowering Wood Anemone.—He also showed an early-flowering form of Anemone nemorosa, possibly the variety quinquefolia, which always opens its flowers in February.

Potato tubers diseased.—Potato tubers showing black discolorations in the flesh, from which a somewhat viscous black fluid was exuding, came from Cambridge and Sunderland. This black decay is probably the result of an attack by a bacterium belonging to the Bacillus melanogenes group, and possibly produces the disease called "black leg," which was somewhat prevalent last year.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

MARCH 7.—*Committee present:* Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, D. A. Cowan, J. C. Cowan, J. Cypher, A. G. Ellwood, J. Evans, P. Foster, A. Hanmer, J. Howes, A. J. Keeling, D. McLeod, J. McNab, W. Shackleton, H. Thorp, and H. Arthur (secretary).

AWARDS.

FIRST-CLASS CERTIFICATES.

Cattleya Hercules (*Empress Frederick* × *armainvilliersensis*); *C. Monarch Colossus* (*Trianae Grand Monarch* × *Empress Frederick*), and *Sophro-Cattleya Thwaitesiae Flammea* (*S. grandiflora* × *C. Mendelii*), from P. SMITH, Esq.

Cattleya Freda Sander (*Mossiae Wagneri* × *Mrs. Myra Peeters*), and *Dendrobium Cybele album*, from S. GRATRIX, Esq.

Odontoglossum Gladys Conyngham (*cirrhosum* × *crispo Harryanum*), from Dr. CRAVEN MOORE.

Odontioda Hypatia Bedhott (*Odm. ardentissimum* × *Odo. Diana*), from Capt. HORRIDGE.

AWARDS OF MERIT.

Odontioda Mirum General Brussiloff and *O. J. B. Lakin*, from J. J. BOLTON, Esq.

Brasso-Cattleya Enid roseum (*C. Enid* × *L.-C. Leemanii*), and *Cypripedium Valentine* (*Archimedes* × *Thompsonii magnificum*), from ENGRS. of the late J. LEEMAN, Esq.

Odontoglossum crispum Nirvana, from Dr. CRAVEN MOORE.

Cattleya Lady Rowena Goldcrest (*C. Suzanne Hye de Crom* × *Warneri alba*), from S. GRATRIX, Esq.

Odontoglossum Ardentillus, from WM. PICKUP, Esq.

Cymbidium Alexanderi aurantiacum, from Mr. J. EVANS.

CULTURAL CERTIFICATE.

To Mr. J. LAW, for a plant of Dendrobium nobile nobilius, bearing 160 flowers.

SCOTTISH HORTICULTURAL.

MARCH 5.—The monthly meeting of this Association was held at 5, St. Andrew Square, Edinburgh, on this date. Mr. David Storrie, Carse of Gowrie Nurseries, Glencarse, read a paper entitled "Domestic Hardy Fruit Culture: Yesterday, To-day, and To-morrow." He spoke for Scotland only. He pointed out that over 100 years ago a lively interest was taken in fruit-growing by leading Scottish gardeners, and that many of their methods of treatment are served up to-day by writers on the subject. But, after all the lectures, writings and text-books ably dealing with both theory and practice, the position of domestic fruit gardens to-day was wretched. Bad soil was the exception, four out of every five seasons were fairly favourable, and it was only want of intelligent management which was the cause of this. Choice of varieties to suit the different localities was of the utmost importance, although in lists of selections by pomologists superior varieties were often omitted altogether. It took the grand Scottish dessert Apple James Grieve thirty years to find popularity, whilst the old culinary variety New Northern Greening, one of the hardiest and most reliable sorts, was as yet comparatively unknown. Dealing with "free" stocks, he said that so long as these were raised from seed there would be, even on the same soil, variations in the same kind of Apple, and that there should be selection of these from the seedlings and perpetuation of them afterwards by cuttings or layers, thus giving the free stock the same reliability as the broad-leaved Paradise had. For Plums five or six different stocks were used, and as to which was best for any particular variety about as little was known to nurserymen as to gardeners. Pears should always be worked on the Quince stock. He dealt with the questions of pruning, manuring, lifting and replanting, and surface cultivation of the soil, and he put in a strong plea for the institution of experimental gardens, as training centres for young gardeners and others, in every county in Scotland. He also thought that Apples and small fruits could be as easily grown on allotments as Peas, Potatos and Onions.

Mr. Storrie was awarded a silver medal for fruit trees, and cultural certificates for seedling Cyclamen and Primula malacoides compacta. Mr. D. Macdonald, Trinity Cottage Gardens, Edinburgh, received a cultural certificate for an exhibit of Camellias.

ROYAL SCOTTISH ARBORICULTURAL.

FEBRUARY 20.—The annual business meeting of this Society was held at 5, St. Andrew Square, Edinburgh, on the 20th ult. The Duke of Buccleuch was elected president, and it was stated that the membership was 1,373, an increase of 35.

A discussion took place on the recommendations contained in the Report by the Forestry Sub-Committee of the Reconstruction Committee, and the following resolution was passed unanimously, viz.: "That this meeting of the Royal Scottish Arboricultural Society welcomes the publication of the Report of the Forestry Sub-Committee of the Reconstruction Committee, and urges the Government to adopt the scheme of afforestation recommended in the Report, and to bring it into operation without delay." Sir Hugh Shaw Stewart proposed as a motion that they express the opinion that the only way in which these recommendations could be efficiently carried out was by the formation of a central forestry authority for Great Britain and Ireland, but it was pointed out that, no notice having been given, this motion could only be dealt with at a special meeting. A special meeting was therefore called for March 15, and on that date, the President being in the chair, the following motion was passed by an overwhelming majority: "That this meeting of the Royal Scottish Arboricultural Society, specially convened, hereby approves of the recommendations of the Forestry Sub-Committee of the Reconstruction Committee, and particularly of the recommendation that a Central Forestry Authority, equipped with funds and powers, be created for Great Britain and Ireland, and urges the Government to carry these recommendations into effect without delay."

Obituary.

WILLIAM B. BOYD.—The death occurred on March 6, at his residence, Faldonside, Melrose, in his 88th year, of Mr. William Black Boyd, a prominent Scottish amateur horticulturist. Mr. Boyd was particularly interested in alpine and bulbous plants, which he cultivated with great success, and especially Primulas and Saxi-

frages. It was with his assistance that the fine Saxifrages, including Boydii, Boydii alba, Cherry Trees, and Faldonside, were raised by his brother, Mr. James Boyd. He also took a keen interest in Snowdrops, Chionodoxas, Scillas and Narcissi. Mr. Boyd was an expert in Pteridology, and possessed a wide knowledge of British Ferns.

CROPS AND STOCK ON THE HOME FARM.

Rearing of Poultry.

This is not the time to encourage the hatching of chickens in large numbers, but sufficient birds should be reared to retain choice breeds and the best laying strains of the type that succeeds best in the particular district. Hens should not be kept beyond their second year, as after that period they do not lay a sufficient number of eggs to render them profitable.

At one time I kept as many as seventeen distinct kinds of fowls, and found them all useful, some for egg production, others for table chickens, whilst some provided broody hens, an important item in the poultry industry, and very necessary here, where hundreds of turkeys were formerly reared in addition to 2,000 chickens. Guinea fowls, ducks and pheasants. Those of the Wyandotte breed are the best sitters, and especially the golden type, the hens being light and gentle in manner.

The main point to observe now is strict economy of food and the production of as many chickens as will provide the necessary eggs and table fowls. Some of the most desirable breeds for eggs are White Leghorns, White Wyandottes, Rhode Island Red, Black Minorca, Buff and White Orpington, and Light Sussex, with an Indian Game cross on Buff Orpington. Light Sussex and Silver or Dark Dorking hens are useful for table chickens.

Cockerels from any of these breeds give table birds of good quality, colour, size, and straight in the breast. Those hatched at the end of March or early in April sell readily in November for stock purposes. Pullets raised at the same period for egg production are even more profitable.

A good type of incubator is, as a rule, the best method of hatching chickens, but now that oil has increased in cost the economy is not so great over that of setting the eggs under hens. If an incubator is used a room free from floor vibration is an absolute necessity; the incubator must stand level on a firm base. The thermometer in the egg drawer should register 101° for two or three days before putting in the eggs, which should be of good size, normal in shape, and perfectly fresh. It is not necessary that they should be of one sort, but all should be less than a week old. As the eggs are placed in the drawer the date should be written in pencil on one side, and on the opposite side a cross. This method of marking the eggs facilitates their being turned twice daily, to prevent the contents sticking to the shell and to cool the eggs, for, say, ten minutes. A quick way of turning the eggs is to wet the tip of the index finger and roll over the eggs until the mark underneath is uppermost. The eggs should not be turned after the eighteenth day, as this involves a risk of drowning the chicks by the liquid in the shell, but they should be cooled as recommended. The thermometer in the drawer should regularly register 103° or 104° but not more.

When hens are used for hatching it is wise to put down two birds or more at the same time, as one hen may have a poor hatch and must of necessity afterwards occupy a coop even if she has but four chickens, whereas if two or more are set at the same time a full coop of chickens is assured for each hen, which means economy of space, time spent in feeding, and general attention. When a brood of chickens has to be made up from more nests than one do not give a hen strange chickens after she has had her own several days, as she quickly resents strangers, so much so that she often kills them for "intruding," as she supposes. The hens should be taken off the nest for a quarter of an hour daily at the same time—say, 8 o'clock; if the removal is irregular the hens become fidgety and often leave the eggs by standing up in the nest, thus cooling the clutch.

Take the hen off the eggs regularly, therefore, give her food and water, and return her carefully to the eggs, closing the nest-shutter securely and keeping all quiet until the following day. Some hens do not take readily to their nest, although they are quite broody: in such a case keep the hen in the dark for a day or two by covering the nest with a bag until she settles down quietly.

Charlock.

Charlock (Brassica sinapis) is a great pest in many counties on light soils, and especially in the south. It infests such spring-sown crops as Oats, Barley and roots. The seed of Charlock can remain dormant in the ground for many years, and directly it is brought to the surface by deeper ploughing commences to germinate. Autumn-sown Wheat and Oats are not affected by the weed, as Charlock cannot withstand frost. This is one reason why winter Oats are more generally grown in some localities than in others, as the labour involved in checking the growth of the Charlock is much less than in the case of spring-sown Corn, but it is doubtful if the crop of Corn is equivalent.

The spraying of Charlock among Turnips, Vetches or Mangold, or any plant with rough leaves, is not practicable, as the solution adheres to the leaves, as in the case of Charlock, and injures the plant. Among cereal crops, however, this danger is not present. Another point in favour of spraying the cereal crops is that the root crops previously mentioned generally follow cereal crops, therefore it is reasonable to suppose that if the Charlock among the cereals is killed there will be less seed of the weed to grow when the same land is cropped with roots.

Many persons also condemn the practice of spraying their Corn crops to destroy Charlock have, I fear, done the spraying inefficiently; generally they have deferred the operation until the weed was too sturdy and hard in the stem to be killed. The spraying should be done directly the first rough leaf has formed. No harm accrues to the Corn crops by spraying, though it may turn the leaves a little brown at the tips. This discoloration quickly passes off, and I believe that the Corn is stimulated in its growth by the spray solution. For Corn land a 3 or 4 per cent. solution (30 or 40 lbs. of copper sulphate to 100 gallons of water) is a safe quantity to use, with a sprayer which distributes the solution in the form of a fine mist. Fifty gallons per acre is sufficient.

Peas for Pigs.

As the ordinary forms of cereal food cannot be obtained in quantity Peas can be used as a substitute for cereals for small pigs after the weaning period and until Kilting time arrives. It is too late to sow the ordinary field Peas, but I propose to grow garden varieties such as Senator, Yorkshire Hero, Eclipse, or any other free-bearing variety that does not grow more than 4 feet high. Such varieties as these, and especially the first named, yield large crops, if given liberal cultivation and supported with ordinary Pea sticks in good time. In deeply-ploughed, well-manured land I purpose growing several rows 200 yards long, and shall sow the seed thinly, certainly not nearer than 3 inches apart. By August such rows should yield much food for pigs in autumn which is a time when they require substantial food, having been receiving during the summer much softer green victuals. If the seed is sown in rows running north and south, and the plants carefully mulched in dry weather, a good return can be reasonably expected.

Nursery Wheat.

I have just completed the sowing of nursery Wheat on two fields of recently ploughed grass land, thinking that Wheat is of more importance to the nation than Oats or Barley. If nursery Wheat does not give so heavy a yield as some other varieties it is generally "strong" in the berry, and that is what the miller requires. The soil in one field is light in texture, overlying a chalk subsoil. The ground, in addition to having sheep fed on it, was dressed with farmyard manure at the rate of 10 tons per acre, and, if required, it will be given soluble plants of ammonia at the rate of 1 cwt. per acre. The second field is stiff soil with a thick grass turf which had been a poultry run for several years, so I am expecting good results from this land without adding manure. The Wheat will be followed by Oats or Potatos next season, when the turf should be thoroughly decayed.

Preparing for Potato Planting.

No time should be lost in getting the soil into a friable condition by cross-ploughing and by the use of the cultivator, disintegrating the hard portions, often the result of ploughing the ground when in a wet condition. Land for Potatos cannot be worked too much, especially if it was previously grass land. The more the soil is exposed to the surface the greater will be the opportunity for birds to clear off grubs, such as wireworms. The tubers, if not already set up to sprout in boxes, should be sorted in readiness for planting, rejecting very small tubers, although "seed" purchased now, having passed the Government 1½ mesh sieve, includes more small tubers than formerly. Any tubers that show the slightest sign of dry rot or other disease should be rejected; all such details as these, if carried out now, will facilitate the work of planting later.

Carrots.

Grown in light loam free from stones I know of no crop that will produce a greater yield per acre than Carrots, which are useful as food for man and cattle. Horses especially enjoy a feed of Carrots in the spring, and the roots act as medicine, making the animals' coats shine after a moderate grooming. The Belgian White variety is the most suitable sort for cattle, giving a large yield. The plants should be given more space than the Red Intermediate, which is one of the best varieties for human consumption. Other good garden Carrots are Red Surrey and Altringham.

Kohl Rabi.

In districts where a difficulty is experienced in obtaining satisfactory crops of Turnips for early feed for fattening lambs, Kohl Rabi is a good substitute, giving a great bulk of nutritious food. The Champion Short Top variety should be sown first, to be followed by Hardy Green. The cultivation is much the same as that for Turnips following a straw crop. Ten tons of farmyard manure per acre applied in the autumn before ploughing, and 3 cwt. of superphosphate when drilling in the seed early in April at the rate of 2 lbs. per acre, will give a considerable increase of crop. Kohl Rabi transplants easily, and blank spaces in the drills may be made good in this way—in fact, the plants may be set out entirely by planting from a seed bed, although this system entails more labour. Gaps in the early Turnip crop may be made good with plants of Kohl Rabi. If the roots are required for human consumption they should be pulled and stored in sand before they become too old, for the flesh is liable to become tough and tasteless as compared to the young, succulent roots.

Grass for Hay.

The time has arrived to "lay up" pastures from which Hay is to be cut this season. Before doing this any long, rough grass that would inconvenience the grass cutters later may be cropped by lean cattle from the straw yard—the animals would eat the rough herbage down bare and greatly facilitate the work of cutting the Hay. A dressing of 4 cwt. of superphosphate or 2 cwt. of sulphate of ammonia would give a fillip to the growth of the grass, previous to harrowing, which is beneficial in scattering droppings and removing moss. Afterwards firmly roll the surface, for this attention will prove of much value in facilitating cutting the grass, in addition to favouring growth, as the roots will be consolidated by pressing the loose soil on the surface. Where obtainable a compost of decayed manure, vegetable refuse, wood-ash and quick lime would make a vast improvement to the growth of the turf, producing close, sweet herbage. The lime and other materials are easily worked into the surface by harrowing and rolling during dry weather. *E. Molyneux, Swanmore Park Farm, Bishop's Waltham.*

MARKETS.

COVENT GARDEN, *March 21st.*

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 average for the week preceding the date of our report. The prices depend upon the quality of the samples, the way in which they are packed, the supply in the market, and the demand, and they may fluctuate not only from day to day, but occasionally several times in one day.—EDS.

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

	s. d. s. d.
Aralias	7 0 – 8 0
Asparagus plumosus	10 0 – 12 0
— Sprengeri	9 0 – 10 0
Aspidistra, green	36 0 – 42 0
Eulalia japonica variegata	18 0 – 24 0
Ferns, in variety	18 0 – 24 0
Ficus elastica	12 0 – 15 0
Genista	12 0 – 15 0
Hydrangea, white	30 0 – 36 0
— pink	24 0 – 30 0
— blue	18 0 – 24 0
Lilium longiflorum	12 0 – 15 0
— auratum	12 0 – 15 0
Marguerites, white	9 0 – 10 0
— yellow	12 0 – 15 0
Mignonette	12 0 – 15 0
Myrtles	12 0 – 15 0
Palms, in variety	18 0 – 24 0
Pelargoniums, double scarlet	12 0 – 18 0
— single scarlet	9 0 – 12 0
— coloured	9 0 – 12 0
— white	9 0 – 12 0
Primula, double	12 0 – 18 0
— single	9 0 – 12 0
Rhododendron, white	24 0 – 30 0
— coloured	24 0 – 30 0
Solanums	12 0 – 15 0
Spiræas	12 0 – 15 0
Tree Ferns	21 0 – 24 0
Tuberous Begonias	10 0 – 12 0
Zonal Pelargoniums	9 0 – 12 0

REMARKS.—Trade is more brisk in this department. Flowering plants, such as Ericas, white and pink Boronias, Cinerarias, Genistas, Cyclamens, Acacias, Mignonette, Daffodils, and Primulas are making a very bright show. Some very fine Hydrangeas, white and blue, in various sizes, and a few specimens of Lilium longiflorum are also offered at high prices.

Ferns and Palms: Average Wholesale Prices.

	s. d. s. d.
Adiantum cuneatum, 48's	9 0 – 10 0
— elegans	9 0 – 10 0
Asplenium, 48's, per doz.	9 0 – 12 0
— 32's	21 0 – 24 0
— nidus, 48's	10 0 – 12 0
Cyrtomium, 48's	8 0 – 10 0
Nephrolepis, in variety, 48's	12 0 – 18 0
— 32's	24 0 – 30 0
Pteris, in variety, 48's	8 0 – 12 0
— large 60's	4 0 – 5 0
— small 60's	3 0 – 3 6
— 32's, per tray of 15's	2 0 – 2 6

Cut Flowers, &c.: Average Wholesale Prices

	s. d. s. d.
Anemone fulgens per doz. bun.	4 0 – 5 0
Arums—	
— (Richardias), per doz. blms.	8 0 – 9 0
Azalea, white, per doz. bunches	4 0 – 5 0
Camellias, white, per doz.	2 6 – 3 0
Carnations, per doz.	
— blooms, best American var.	2 6 – 4 0
Croton leaves, per bun.	1 3 – 1 6
Daffodils (single), per doz. bun — Barri	3 0 – 5 0
— Emperor	6 0 – 8 0
— Golden Spur	3 0 – 4 0
— Princeps	3 0 – 4 0
— Sir Watkin	3 0 – 4 0
— Victoria	5 0 – 6 0
Eucharis, per doz. blooms	3 0 – 4 0
Freesia, per doz. bun.	3 0 – 4 0
Heather, white, per doz. bun.	9 0 – 12 0
Lilium longiflorum, long	7 0 – 8 0
— — rubrum, per doz. long	4 6 – 5 0
Lily of the Valley, per doz. bun	3 0 – 4 0
Narcissus, Grand Primo, per doz. bun.	3 0 – 4 0
— ornatus	4 0 – 6 0
— Soleil d'Or	3 0 – 4 0
Orchids, per doz.—	
— Cattleyas	12 0 – 18 0
— Cypripediums	4 0 – 6 0
Pelargoniums, double scarlet, per doz. bunches	12 0 – 18 0
Roses, per doz. blooms—	
— 6, in mallaque-natural	3 0 – 4 0
— Lady Hillingdon	4 0 – 5 0
— Ladyhove	6 0 – 10 0
— Niphetos	3 0 – 4 0
— Richmond	6 0 – 8 0
— Sunburst	6 0 – 12 0
Tulips, per doz. blooms	3 0 – 4 0
— Darwin, various	3 0 – 3 6
— single, white	2 6 – 4 0
— — Yellow	2 6 – 3 0
— — Pink	2 6 – 3 0
— — Red	3 0 – 4 0
— Double, red	3 6 – 3 0
— — yellow	4 0 – 4 6
Violets, per doz. bun.	4 0 – 5 0

French Flowers: Average Wholesale Prices.

	s. d. s. d.
Anemones, double pink, per doz. bun.	2 6 – 3 0
— single, mixed	5 0 – 6 0
Mimosa (Acacia), per basket	5 0 – 7 0
Narcissus, per basket—	
— Paper White	12 0 – 15 0
Carnations, carmine per doz. bun.	6 0 – 8 0
— scarlet	15 0 18 0
Stocks, white, per pad	9 0 – 12 0
Violets, Parma, per bun.	4 0 – 5 0
— Marie Louise, per pad	10 0 – 12 0

Cut Foliage, &c.: Average Wholesale Prices.

	s. d. s. d.
Adiantum (Maidenhair Fern), per doz. bun.	10 0 – 12 0
Asparagus plumosus, long trails, per half dozen	2 6 – 3 0
— — bunch, doz. bunches	18 0 – 21 0
— Sprengeri	10 0 – 15 0
Berberis, per doz. bun.	6 0 – 8 0
Carnation foliage, doz. bunches	4 0 – 5 0
Cycas leaves, per doz.	3 0 – 6 0
Ivy leaves, per doz. bunches	2 0 – 2 6
Moss, green, per bun.	7 0 – 8 0
Smilax, per bun. of 6 trails	2 0 – 2 6

REMARKS.—Supplies show little change from last week. White flowers appear to be more in demand, and prices are firmer for best quality blooms, inferior lots being of somewhat irregular value. Roses are increasing in numbers, and are cheaper. Lady Hillingdon and Niphetos are on sale, the latter variety being the most in demand. The supplies of Carnations are ample and for the demand, and blooms are improving in quality. Lily-of-the-Valley and Camellias are cleaner. Large quantities of Stock, Sort of Bethlehem (Allium), White Roses, and Richardias (Arums) have been despatched to Wales this week for Palm Sunday, and larger quantities of these flowers will be required for the Easter festivities next week. A general rise in prices is therefore expected during the next few days.

Vegetables: Average Wholesale Prices.

	s. d. s. d.
Artichoke, Chinese (Stachys) per lb.	1 0 – 1 3
— Globe, per doz.	7 0 – 9 0
— Jerusalem, per ½ bushel	2 6 – 3 0
Asparagus (English), per bundle	10 0 12 0
— National, per bundle	16 0 27 6
— (Paris Green), per bundle	10 0 – 16 6
Beans—	
— French (Channel Islands), per lb.	2 6 – 3 0
Beetroot, per bus.	2 6 – 3 0
Brussels Sprouts, per ½ bus.	2 0 – 3 0
Cabbage, per bag	3 0 – 5 0
Carrots, new, per doz. bunches	4 0 – 6 0
— per bag	5 0 – 7 0
Cauliflowers per doz	4 0 – 5 0
Celeriac, per doz.	7 0 – 8 0
Celery, per bundle	3 0 – 4 0
Chicory, per lb.	0 4 – 0 8
Cucumbers, per doz.	6 0 – 12 0
Endive, per doz.	3 6 – 4 0
Garlic, per lb.	0 8 —
Greens, per bag	2 0 – 3 0
Herbs, per doz. bun.	2 0 – 4 0
Horseradish, per bun.	3 0 – 4 0
Leeks, per doz. bun.	2 0 – 4 0
Lettuce, Cabbage, per doz.	1 6 – 3 6
Mint, forced, per doz. bun	3 0 – 5 0
Mushrooms, per lb.	2 6 – 3 6
Mustard and Cress, per doz. punnets	1 3 – 1 6
Onions, French, per cwt.	31 0 34 0
— spring, per doz. bun.	4 0 – 6 0
— Valencia, per case (4 tiers)	34 0 38 0
— (5 tiers)	34 0 38 0
Parsley, per strike	2 6 – 3 0
Parsnips, per bag	6 0 – 7 6
Potatos, new, per lb.	1 0 – 1 3
Radishes, per doz. bunches	2 0 – 3 0
Rhubarb, forced, per doz.	1 8 – 1 10
— natural, per doz.	4 0 – 6 0
Savoys, per tally	8 0 – 12 0
Seakale, per punnet	2 6 – 2 9
Shallots, per doz. lbs.	8 0 – 10 0
Spinach, per bus.	4 0 – 5 0
Swedes, per bag	2 0 – 2 6
Turnips, per bag	3 0 – 4 0
Turnip tops, per bag (72 lbs.)	3 0 – 4 0
Vegetable Marrows, per doz.	15 0 18 0
Watercress, per doz.	0 10 —

Fruit: Average Wholesale Prices.

	s. d. s. d.
Almonds per cwt	170 0 —
Apples—	
— English, per bus.	30 0 45 0
— Russets, French, measured about 60 to 70 lbs.	50 0 – 60 0
Dates, per box	1 7 1 8
Grapes—	
— Almeria, per barrel (42 dozs., lbs.)	55 0 70 0
— Gros Colman, per lb.	5 0 – 9 0
Lemons, per case	40 0 – 48 0
Nuts, Barcelona, per bag	150 0 —
— Cob, per lb.	1 9 – 1 10
Oranges, per case	100 0 – 140 0
Strawberries, forced, per lb.	8 0 – 20 0
Walnuts, kiln dried, per cwt.	100 0 – 110 0

REMARKS.—Stocks of Apples are now very much depleted. The following varieties are on offer:—Bramley's Seedling, Newton Wonder, Dumelow's Seedling, and French Russets (French). Forced Strawberries are more plentiful. Both Grapes are nearly over, several growers are finishing this week. Almeria Grapes (Spanish) continue available. Supplies of Asparagus are reaching the market from Devonshire Millisex, and the Continent. Forced Vegetable Marrows are on offer, and Cucumbers are fairly plentiful. Supplies of Mushrooms show an increase on last week. A few English Tomatos are on offer this week. Natural and forced Rhubarb is plentiful, but Seakale is somewhat scarcer than usual. Cauliflowers are fairly plentiful, and very good supplies of Dwarf Beans are on offer. *E. H. R., Covent Garden.*

GARDENING APPOINTMENTS.

Mr. Alfred J. Nightingale, to the past 11 years and 7 months Gardener to F. ALLEFEY, Esq., Bury Down, Newport, Pagnell, Buckinghamshire, and formerly at Rewlands, Northampton, and Bignor Park, Sussex, as Gardener to A. ALLISONE, Esq., The Grange, Ealls Burton, Northampton.

Mr. John Lemon, for 13½ yrs. Gardener to H. J. W. MARTIN, Esq., West Grove, Mill Hill, Middlesex, as Gardener to Lieutenant-Colonel BARROW, Farmington Lodge, Northleach, Gloucestershire.

SCHEDULES RECEIVED.

Croydon Horticultural Society's Show of Vegetables and Home Produce.—Wednesday, July 17, 1918. Secretary, Mr. L. R. Whitehead, 11, Addiscombe Court Road, Croydon.

Brighton, Hove, and Sussex Horticultural and Food Production Society. Autumn Exhibition of Vegetables, at Dyke Road Aquarium, Brighton, on October 15 & 16, 1918. Secretary, Mr. A. J. Gaston, 140, Springfield Road, Brighton.

CATALOGUES RECEIVED.

KELLY & WALKE, Ltd., 55, Strand, Strand, London.—Special Seed Catalogue.

W. E. JENNINGS, Bath Common, Walsall.—Empire Garden Cult. Notes.

H. CANNELL & SONS, Eynsford, Kent.—Fruit trees and Roses.

ANSWERS TO CORRESPONDENTS.

ALLOTMENT: *D. K. P.* Seeing that the ground has been well cultivated, enriched with a fair amount of manure, and dressed with basic slag and ground agricultural lime early in November, it should be in good condition to carry crops this season. The best method of applying the sulphate of ammonia is to dust it on the ground at the rate of 2 oz. to the square yard just before sowing or planting a crop. This fertiliser should not be buried deeply: the subsequent planting will disturb the soil just enough to cover it. The sulphate of potash should be applied at the same rate and the same time. With regard to the road-sweepings, they must not be used if they contain petrol or motor oil, or even tar. The very best material for your purpose would be wood-ash. Seeing that your ground contains so large a percentage of clay, it will inevitably be somewhat heavy for the first year or so, and it would be unwise to trench it too deeply. Gritty soil, leaf mould, wood-ash, peat, old mortar rubble, lime, and burnt clay, well forked in, would permanently improve the ground, but the best way of bringing the soil into a friable, well-pulverised condition is by throwing it up in rough clods in the autumn, and leaving it thus all the winter exposed to rains and frosts. Never fork it over when it is very wet; nor should the lumps thrown up in the winter be allowed to become baked by the sun in the spring before they are broken up. For such crops as you name stable manure is necessary, but for the Cabbages and Carrots fresh dung is not desirable, nor should leaf-mould be used for Carrots. Seeing that your soil is rather wet, the Celery may be grown on the flat ground instead of in trenches, but be careful that the roots do not suffer for want of moisture. Dusting the foliage with soot when it is damp will help to ward off attacks of the Celery Fly. The blanching can be done with brown-paper bands as recommended on p. 116. Autumn-sown Onions will do better than those raised from seed sown now, and will be less liable to be injured by the Onion Fly. Soot is an excellent manure for all vegetable crops, especially at the seedling stage. Good King Henry is Chenopodium Bonus-Henricus, a British plant; it is sometimes known as Mercury. It should be grown in a warm position in well-drained soil. Sow the seeds now and thin the seedlings to about 2 feet apart each way.

LICENCE FOR SALE OF POISONS: *W. B.* Apply to your local Urban District Council for the necessary form to fill in.

NAMES OF FRUITS: *J. L., Ireland.* 19, Blenheim Pippin; 21, Sturmer Pippin; 26, Dutch Mignonne (syn. Reinette de Caux); 31, Harvey's Wiltshire Defiance; 32, Golden Reinette; 33, Claygate Pearmain; 34, King of the Pippins.

NAMES OF PLANTS: *J. B.* 1, Arbutus Unedo; 2, Prunus Pissardii.—*E. N., Keston.* Acacia dealbata ("Silver Wattle").

SILVER LEAF IN PEACH TREE: *E. W.* Since it would appear that the tree of Prince of Wales Peach is certain to die, being so badly infested with Silver-leaf disease, your best plan will be to root it out completely and burn it, or it will infect the other trees in the house which are apparently still healthy. Be careful to remove the whole of the roots, and also the soil for a few feet around them; this soil should not be placed near any kind of stone-fruit trees, but wheeled to the vegetable quarters. Replace the soil by fresh compost, and be careful that the tree planted in place of the Prince of Wales is quite healthy. Watch the other trees in the house for symptoms of Silver-leaf, and the moment you observe the disease cut out the affected branch well below the seat of injury.

SOYA BEAN: *E. M.B.* The article on the Soya Bean by Mr. Irwin Lynch, of the Botanic Gardens, Cambridge, was published in the issue for January 26, 1918, p. 38.

Communications Received.—J. T.—H. K.—J. C.—Mrs. W.—G. H. C.—L. F.—E. A. R.—C. C. R.—S. & Sons.—P. G.—C. M. G.—G.—W. H. D.—E. M.—G. H. H. W.—E. H. J.—L. C. R.—N. E.—S. A.—G. C.—Wexham Place.—J. A. P.

THE
Gardeners' Chronicle
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CONTENT.

ILLUSTRATIONS.

PROTECTION OF GORTERIA AND NEURADA SEEDLINGS.

WHILST contrivances for the effective distribution of seeds are many and varied, there seem to be comparatively few which are adapted for this purpose and at the same time serve as a protection for the young seedling. A remarkable example, however, occurs in Gorteria, a genus of Compositae, represented by four species, natives of South Africa. All four plants are very closely related and difficult to distinguish from one another. In each flower head there are several flowers surrounded by an involucre of rigid spiny bracts, the latter being connate at the base into a more or less woody cup (see fig. 60). The heads are solitary at the end of each branchlet. They eventually break off at the apex of the peduncle, and fall bodily to the ground with the persistent flowers and ripe achenes inside. After rolling about in the wind—for they are extremely light—they probably become wholly or partially covered by sandy soil. At length one achene germinates, to the exclusion of the remainder, whilst still enclosed in the involucre of bracts, and pushes its radicle through the hole at the bottom of the head, where it was attached to the peduncle. The plumule emerges from the space between the bracts at the top of the involucre, which is held a prisoner around the hypocotyl, and it remains there during the entire life of the plant. This persistent involucre is present on every specimen preserved in the Kew Herbarium, and would appear to be an important generic character not previously noted.

No doubt this feature of Gorteria is familiar to many South African botanists, for at least one species is common on the Cape Peninsula, a favourite and convenient collecting ground for those in the neighbourhood of Cape Town. But no reference to the peculiarity has been found in any papers on such subjects. Marloth did not mention it in his presidential address to the South African Philosophical Society for 1894, which gave an interesting account of the means of distribution of seeds in the South African flora. For in all probability the light, woody, prickly involucre would at first act as a carrying agent in the dispersal of the achenes, either by being blown about by the wind or by attaching itself to animals. Marloth (l.c., p. 79) states that there are few instances in the South African flora in which the whole plant or its inflorescence is blown about by the wind. He records as examples the umbels of Brunsvigia (Amaryllidaceae) and a species of Stachys (Labiatae). To these, then, may be added Gorteria.

This remarkable method of distribution and protective germination is very probably quite unique in the family Compositae, with its upwards of 12,000 species. There are analogous features in the families Rosaceae and Leguminosae. In Neurada procumbens (Rosaceae), a native of the desert regions of North Africa and the Near East, the floral envelopes, the calyx and petals, persist and surround the hypocotyl of the seedling in exactly the same way as in Gorteria. But here, as will be readily understood, there is only one flower concerned, and not an inflorescence, as in the Compositae. It is somewhat curious that this genus has lately been found to be represented in South-West Africa, a second species having been discovered a few years ago by a German collector named Dinter, at Orumbo, in Hereroland. It was described by Dr Hans Schinz, of Zurich, as Neurada austroafricana. It is very closely allied to N. procumbens, and shows the same peculiarity in germination.

In the Leguminosae, the spirally twisted pod of several species of Medicago

FIG. 60. YOUNG PLANT OF GORTERIA PERSONATA.
Showing persistent involucre of bracts enclosing the hypocotyl (nat. size) and longitudinal section of same (enlarged).

encircles the seedling during growth in a similar way to Neurada, but it is not so strikingly persistent as in that genus and in Gorteria. In the Leguminosæ, then, we have a third type, the fruit, giving protection to the growing seedling. I have noticed this characteristic in several species from the Mediterranean region, namely, in Medicago santellata, Ait., M. elegans, Jacq., M. sphærocarpa, Moris., M. turbinata, Willd., M. globosa, Presl., M. Gerardi, W. and K., M. agrestis, Ten., M. Tenoreana, DC., M. charis, Willd., M. Echinus, DC., and M. disciformis, and perhaps in a few other species. A similar condition occurs in one or two Oriental species of Hedysarum.

As some confusion has existed in herbaria regarding the limitation and distribution of the species of Gorteria, I have added the following key, and all the available records of collectors.

KEY TO SPECIES OF GORTERIA.

Stems mostly diffuse, hispid; flower head solitary at the end of each branchlet:

- Ray-flowers very broad, broadly obovate rounded and entire at the apex, rather shorter than the involucre ... 1. G. calendulacea
- Ray flowers usually very narrow, oblong or linear, clearly notched or toothed at the apex, usually equalling or longer than the involucre, rarely shorter.
  - Inner involucral bracts at flowering time with long bristle-like points glabrous in the upper part ... 2. G. personata
  - Inner involucral bracts at flowering time with short glabrescent apices, ciliate and flat nearly to the apex ... 3. G. diffusa
- Stems usually erect, glabrous or sparingly setose; flower heads crowded, corymbose; involucral bracts slender, densely villous with long silky white hairs ... 4. G. corymbosa

1. Gorteria calendulacea, DC. Prodr. vi. 501; Drège, Zwei Pflanzengeogr. Docum. 102, 104; Harv. in Harv. and Sond. Fl. Cap. iii. 470; Bolus and Wolley-Dod, Fl. Cape Penins. 283.

Distrib.—South Africa: Cape Division; Lion Mountain, dry stony places below 1,000 ft. Oct., *Drège*.

Drège (l.c. 102) states that he also gathered a plant of this species between the Paarl Mts. and the Paarde Berg, in the Paarl Division. I have not seen this specimen. The species may now be extinct, for it has not again been collected since its discovery by Drège in 1840. It is a small diffuse plant characterised by its broad ray flowers, which are about as long as the involucral bracts.

2. Gorteria personata, Linn. Sp. Pl. 1283; Thunb. Fl. Cap. ed. Schult. 696; Less. Syn. 51; DC. Prodr. vi. 501; Harv. in Harv. and Sond. Fl. Cap. iii. 470; Bolus and Wolley-Dod, Fl. Cape Penins. 283.

Distrib.—South Africa: Tulbagh Div.; sandy places at Nieuwekloof, near Tulbagh, 9,000 ft., Sept., *MacOwan*, 326; Tulbagh Road, *Schlechter*, 9,001; Drakenstein Mt., *Rehmann*, 2,248. Cape Div.: Table Mt., *Bellon*, 368; eastern side of Lion's Rump, Table Mt., Dec., *Burchell*, 135; Signal Hill, Sept., *Wolley-Dod*, 1,578; Lion's Head, over Sea Point, Sept., *Wolley-Dod*, 1,591. Mossel Bay Div.: sandy hills near the landing place, Mossel Bay, Oct., *Burchell*, 6,256; Attaquas Kloof, *Gill*, "South Africa," without precise locality, *Harvey*, *Pappe*.

3. Gorteria diffusa, Thunb. Fl. Cap. ed. Schult. 697; Less. Syn. 52; DC. Prodr. vi. 501; Harv. in Harv. and Sond. Fl. Cap. iii. 470.

G. affinis, DC. l.c.

G. diffusa, var. *intermedia*, Harv. in Harv. and Sond. l.c.

Distrib. — South West Africa: Little Namaqualand: Groen River, karroo-like places 1,000-2,000 ft., Aug., *Drège* a; near Ookiep, *Marais in Herb. Bolus*, 5,769, 5,770; *Miss Edith Fourcade*; Brackdam, 2,000 ft., Sept., *Schlechter*, 11,153; dry mountains near Kookfontein, 3,000 ft., Aug., *Bolus*, 397; Karee Bergen, 1,500 ft., Aug., *Schlechter*, 8,225. Eenkniet, lower rocky slopes, *Pearson*, 3,092. Vanrhynsdorp: dry stony hills below 500 ft., Nov., *Drège*, b. Worcester, between Slangenheuvel, French Hoek and Donkerhoek, below 1,000 ft., Oct., *Drège* c; Hex River Valley, Aug., *Wolley-Dod*, 4,022.

4. Gorteria corymbosa, DC. Prodr. vi. 501; Harv. in Harv. and Sond. Fl. Cap. iii. 470.

Distrib.—South-West Africa: Little Namaqualand: Gariep, on the Orange River, near Verleptpram, below 500 ft., Sept., *Drège*, Vuurdood, on hills, 1,700 ft., Sept., *Schlechter*, 11,445; Great Karasberg; dry banks of riverine gravels in Dassiefontein River bed, Jan., *Pearson*, 7,928. *J. Hutchinson.*

ORCHID NOTES AND GLEANINGS.

NEOMOOREA IRRORATA.

At the meeting of the Royal Horticultural Society on the 12th inst., Mr. Thurgood, gardener to H. T. Pitt, Esq., Rosslyn, Stamford Hill, received a Cultural Commendation for a noble plant of the rare Neomoorea irrorata (see figs. 61, 62). Mr. Pitt's specimen was additionally interesting, inasmuch as it was a part of the original plant acquired at the dispersal of the Burford collection. The plant bore large, green pseudo-bulbs, each with a pair of broad, pleate leaves, and having two upright spikes of many pretty flowers, which are more than 2 inches across, the sepals and petals being of a peculiar red-brown with yellowish white bases. The lip, which in structure somewhat resembles Houlletia, is straw yellow spotted and barred with dark purple-brown. The species was described from the type plant at Glasnevin in *Gard. Chron.*, July 4, 1890, p. 7, as Mooreа irrorata Rolfe N. gen. and sp.

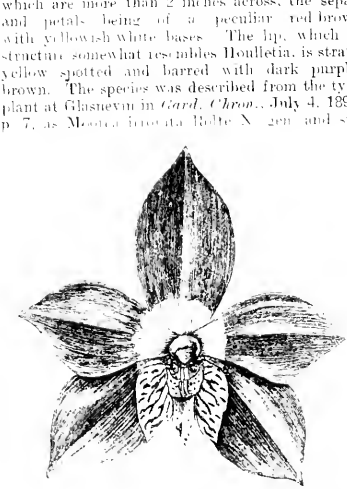


FIG. 61.—FLOWER OF NEOMOOREA IRRORATA: COLOUR BROWNISH RED. NAT. SIZE.

the fact that Mooreа had been applied many years ago to the Pampas Grass having escaped at Trenton, and this necessitated the change of name to Neomoorea. It was first shown from Glasnevin at the Royal Horticultural Society's meeting of March 22, 1892, when it was awarded a First-class Certificate. For some years the native habitat of this Orchid was unknown, but it has since been recorded from the region of the Alberto River, Province of Santander, S. America. The plant bears much resemblance to Lycaste gigantea, and grows in the same region, but botanically it is widely separated.

CYMBIDIUM RHODOCHILUM.

The statement by W. H. on p. 122 that this beautiful Madagascan species "flowered once at Kew and nowhere else" is incorrect. The plant flowered first at Kew, and subsequently in several gardens. Dr. Hodgkinson showed it at the Manchester and North of England Orchid Society's meeting, May 15, 1904, and secured a First-class Certificate for it, a similar award being given when Mr. Bradshaw, of Southgate, showed it at the Royal Horticultural Society's meeting on May 9, 1905. At the Temple Show, May, 1906, Messrs. Wm. Bull and Sons included a fine specimen in their group, the plant forming the subject of the supplementary illustration in *Gard. Chron.*, June 17, 1905. The handsome, pale greenish-yellow flowers have petals spotted with purple, whilst the lip front and sides are bright red. The species would probably be of value to raisers, and if hybrids of it could be obtained they would tend to break the monotony of the now rather overworked hybrid Cypripediums of to-day. But the plant gives another instance of lost opportunity to perpetuate rare species by home-raised seedlings, and thus ensure for gardens the continuance of what was known to be a rather difficult subject. The plants have doubtless all vanished, but if seedlings had been raised they would have been much more amenable to culture than imported specimens. I have often urged the necessity for obtaining true seedlings of rare imported species, and it is to be hoped that growers will give the matter their attention. Mr. Warpur, the collector, stated that Cymbidium rhodochilum always grows on masses of Platycerium, and some of his plants were on that Fern when distributed. The specimen in Lord Rothschild's gardens at Tring Park was growing on a mass of Fern, and, suspended in a warm house, it did well for some time. Others which were potted in the same manner as Cymbidiums quickly collapsed. *J. O'B.*

MORE SPRING FLOWERS.

The time when the scent of the Crown Imperials is wafted about the garden is always interesting, for it is a time when most plants that disappear under ground in winter are reappearing. Some might be inclined to call the scent of the Crown Imperial a smell and to dislike it, but to me it is never displeasing. Where the scent comes from and how it is dispersed in puffs or whiffs many yards across the garden is always a mystery, and surely there are not many plants which give off so distinct a scent at such an early stage in their annual development. For those who do dislike the scent there is a form or species, Fritillaria modora, but it is apparently a rare plant, and I only remember to have seen it once doing really well, and that was in a sheltered corner of the late Sir Michael Foster's garden on the hillside at Shelford. It is rare probably because it flowers early in April, and therefore often suffers badly from rough weather by reason of its early development.

This year the beautiful dark Anemone, with its drooping heads, that I take to be montana, has come into flower several days in advance of Pulsatilla. This is not always the case, and yet the two groups of plants are growing within a few feet of one another and have been undisturbed. It seems as though the night frosts, which have been frequent of late, have checked Pulsatilla, but have had little effect on montana.

Tulipa Kaufmanniana is now at its best, and its best is very good indeed. It is curious how each individual flower seems to grow from day to day. At first the buds seem very small, but after a few days they develop into normal or even very large flowers. The form in which the flowers are wholly yellow, seems to open a few days after the white and yellow type, and also after the rare scarlet form. Possibly the last is really a different but closely allied species. It breeds true from seed when self-fertilised, or at any rate the first of my seedlings that have flowered are wholly scarlet, and it is also capable of producing two flowers on the stem, though I have never known this to happen in the case of the type. Moreover, the flowers never seem to open out flat in the sun, as do the white and yellow forms, which seem to come indiscriminately from seed of either.

A very fine early Tulip has resulted from a cross between Tulipa Greigii aurea and T. Kaufmanniana. I owe my original bulb of this plant to the generosity of M. Denis, of Balaruc-les-Bains, but, if my memory is correct, the cross was made either at Haarlem or at Oberlahnstein. It in-

creases slowly by offsets, and flowers with Kaufmanniana, and therefore well in advance of Greigii. The colour is a clear, soft yellow, with a broad band of scarlet down the centre of the back of the outer petals, and the shape is rather that of Greigii, the most shapely of all Tulips.

Two early Tulips are also in flower under the names of Polychroma and Pulchella, though it is not certain that they have much right to these names. Each Tulip species seems to have been described on a totally distinct plan by someone who was blissfully ignorant of the allied species with which it might be compared and confused. What I have as Polychroma has flowers of a pale pink of a curious globular form, while Pulchella is a deep red with a blue base.

As usual, Iris orchioides alba was the first of the tall Turkestan Juno Irises to come into flower, closely followed by a pale lemon coloured seedling of I. bucharica. I. orchioides alba increases very fast here in the shelter of a cold frame, which always remains open. It is distinctly smaller than the type, but a valuable addition to the group. *W. R. Dykes, Charterhouse, Godalming.*

MANURING EXPERIMENTS ON FRUIT.

THE Sixteenth Report of the Woburn Experimental Fruit Farm, by the Duke of Bedford and Mr. Spencer U. Pickering (Amalgamated Press, London), summarises the results of manuring experiments on Apple trees from 1895 to 1915, previously dealt with for the first eight years in the Fourth Report. The lack of fruit in 1916, it is explained, rendered that year a blank in relation to the experiments. So far as the original trials on the Ridgmont Farm are concerned, the almost entirely negative results at least in the manuring of Apple trees, shown in the Fourth Report, are stated to have been confirmed in the years that have elapsed since the date of that report. Wood formation, sizes and weights of trees, sizes of leaves, and weights of fruit are declared to have been entirely or almost entirely unaffected by the annual application of artificial manures or dung. It is a pity, however, that, with the exception of one account of wood growth, this is not demonstrated in the tabulated results for Apples at Ridgmont. The comparisons of results are between those of less than normal applications of manure, normal, and more than normal. The "less than normal," in some cases, if not in all, include the results of no applications of manure, but as the results of small dressings are incorporated with those of none, there is no comparison between the products of manured and unmanured plots. Mr. Pickering may have abundance of evidence to prove that Apple trees and their crops at Ridgmont have not generally been benefited at all by manures, but all that his tabulated results, with one exception, show is that no peculiar advantage has been gained by increasing the dressings of manure described as "less than normal." The obvious comment is that even a small dressing annually may have been made for the trees, so that any extra quantity was mere surplusage, which, on the whole, did no good.

The results of manurial experiments on Apples at Ridgmont recall to memory those given in a Bulletin issued from the New York Agricultural Experiment Station in 1911, entitled "Is it Necessary to Fertilise an Apple Orchard?" In this case the results of various dressings of manure, including dung, for fifteen years, were compared with those of undressed land, with almost as general a lack of benefit from the manures as is indicated in the report for Ridgmont. Incidentally, however, it was stated that a cover crop was grown every year and ploughed in. Therefore, there was no comparison between no manure and manure, as liberal green manuring was carried out annually, and this, apparently, was all that the trees required.

The results of manurial experiments on Apples at Millbrook, where the soil is lighter and less rich in available potash than it is at Ridgmont, are strikingly different from those of the latter station. At Millbrook the general average results of manuring with artificials and dung for six years are given as follows:—

	Less than Normal.	Normal.	More than Normal
Leaf size	98.5	100	100.7
Weight of Prunings	85	100	129
Weight of fruit	75	100	135
Size of fruit	81	100	196

The weight of prunings indicates growth of new wood. For Millbrook we have the results of no manure tabulated in the detailed statistics. Taking the results of no manure as 100, a single dressing of artificial manures, including nitro-

FIG. 62.—INFLORESCENCE OF SELAGINELLA IRRORATA. (¼ NAT. SIZE.)

(See p. 134.)

gen, phosphoric acid, and potash, gave 111; a double dressing 120; and a treble dressing 163 in weight of prunings; while the corresponding figures for weight of fruit are 111, 142, and 163; and those for size of fruits are 132, 132, and 165. For dung the results are still more remarkable. Still taking 100 represent no manure, the figures relating to weight of prunings are 154 for a single dressing, 215 for a double, and 227 for a treble dressing; while the corresponding figures for weight of fruit are 156, 186, and 242; and those for size of fruits are 191, 272, and 251. The increases are all the more remarkable considering the fact that the Millbrook plots have been allowed to run to grass. A single dressing of dung is 12 tons per acre, and it might have been supposed that this applied annually would have been ample. The figures show, however, that in weight of fruit, as well as in growth of new wood, the double dressing gave extra advantage, while the treble dressing of 36 tons per acre annually increased the growth and fruit still more. The increase in weight of fruit is more astonishing than the augmented growth of new wood, because liberal manuring is expected to force wood growth, whereas such forced growth is usually against the production of fruit. It can hardly be supposed that the application of so great a quantity of dung annually would prove remunerative, or that it could be obtained by all growers in extensive fruit districts, even if they desired to apply it.

The results of omitting in turn from the complete dressing of artificial manures each of the constituents are interesting, but puzzling. When potash was omitted there was a great decrease in wood growth and weight of fruit; but the omission of phosphate showed increases in both cases over the results of the complete manure, while the omission of nitrogen made no considerable difference. Mr. Pickering explains that the soil at Millbrook contains sufficient phosphate and a fair supply of nitrogen; but, in reference to the latter, he states that as the soil is a coarse sand, nitrate of soda is quickly washed out of it. It might be supposed, however, that a soil which loses nitrogen easily would need specially to have it supplied frequently.

Experiments on Gooseberries, Red Currants, Raspberries, and Strawberries were carried out at Ridgmont. Those on Gooseberries gave the most remarkable results of any mentioned in the report. Although neither artificial manures nor dung had any considerable effect upon Apples on this farm, so far as the tabulated results show, both, and particularly dung, had a great effect on Gooseberries. Taking 100 as representing the produce of unmanured land, artificials equivalent to 12 tons per acre of dung gave 116 as the average of 15 years, and when the quantity was equivalent to 30 tons of dung, there was a further increase to 207. When dung itself was applied the increases were vastly greater, rising to 656 for 12 tons per acre, and 1,210 for 30 tons. Moreover, the effects of the dung were cumulative, the crops of the last two years of the period being represented by the figures 1,850 and 1,220, against 100 for unmanured land. A great proportion of the bushes on the unmanured land died before the end of period, only 23 remaining out of 180 in the last year. The deaths were much less, but still considerable, on the artificially manured plots, but comparatively small on the dunged plots. Red Currants and Raspberries responded moderately to dressings of artificial manures, but much more to dung, though not nearly to the same extent as Gooseberries. The results of manuring Strawberries were too irregular and disappointing to allow of any lesson being derived from them.

PLANT NOTES.

PRIMULA VEITCHII.

Of the Primulas which have come to us from the Far East within the last few years P. Veitchii ranks as one of the "easy" growers. It has found its way into a good many gardens, and is a plant which is exceedingly obliging in its ways, flourishing in almost any soil, but showing a preference for good new loam and old leaf soil. A little well-rotted cow manure renders it still more vigorous. It has prettily formed leaves, soft-looking in their texture and of a good green colour. The flowers are a kind of magenta-purple; purists in colour-tones assert that they are rather aggressively magenta. But a good deal must be forgiven to a plant which grows so satisfactorily as Primula Veitchii.

It will grow in the border in the rock garden, and even in a moraine if it has access to some good soil beneath the upper layer of gravel or chips. It likes partial shade, but can be grown in full sunshine if not too dry a place. Propagation is effected by division or seeds. *S. Arnott.*

ON INCREASED FOOD PRODUCTION.

DWARF BEANS IN FRAMES.

Good crops are obtained from Dwarf Beans grown in frames on hot beds. Four-lighted frames are the best to use, as the whole structure can then be easily raised as the plants grow. Seed should be sown singly about the middle of March in 3 inch pots, and placed in a warm house to germinate. About 8 inches of soil should be placed on the hot-bed, using similar soil to that in the pots. Care must be taken not to let the plants grow too large before planting. The main shoots should be pinched out a day or so before planting. Allow 14 inches each way between the plants, and support the side growths with small sticks obtained from half-worn Birch brooms. The lights must be kept closed until new growth is visible, but afterwards ventilate when the weather is favourable. Syringe the plants twice a day, but not enough to saturate the soil. Lightly dust the surface soil with soot to ward off slugs and act as a stimulant to the growth. *C. Davis, Holy Wells Park Gardens, Ipswich.*

LETTUCE

To raise Lettuces successfully under glass, every care is necessary to prevent the plants from getting crowded and growing weakly. If the seeds are sown in gentle warmth the boxes should be removed to cool houses directly germination commences. Place the boxes in a cool, light, airy house, where the plants will grow sturdily, and later prick the Lettuces off 2 inches apart into other boxes. When they have made sturdy little plants about one inch high transfer them to cold frames, and admit air freely. The lights should be removed when the weather is favourable, and air admitted to the frames at night, when there is no danger of frost. Take the boxes out of the frames for a week or ten days before the Lettuces are planted out in order to harden the plants.

Seeds may be sown direct in the soil in a frame, and the plants thinned when large enough. A sowing may now be made in the open, and successional sowings at intervals of three weeks until the middle of June. Any rough, low frames are suitable for raising Lettuces. All that is really needed are a few boards nailed to stakes driven into the ground. If these are covered with lights they answer as well as frames of the best quality.

The ground for Lettuces needs to be deeply dug in autumn, but where this cannot be done, let it be dug as early in the year as it can be cleared of other crops. On that dug early manure should be wheeled during frosty weather, and left in heaps ready for spreading some time previous to planting. I prefer to do this and fork the manure in at the same time, breaking up the soil well as the work proceeds. All the land that was turned up roughly last year became thoroughly pulverised, and was in excellent condition for planting after it had been forked over and left for two or three days. Lettuces grow freely in well-worked soil, and if the surface has become fine from exposure the seedlings are easier to plant and grow more quickly than when the soil is rough and lumpy at planting time.

Lettuces dislike fresh manure, but the roots take to rotten manure freely

Give the plants in the boxes a good watering a few hours previous to planting them; the roots will then lift with plenty of earth attached, and may be transplanted without check if the work is done carefully with a trowel. Shallow drills one foot apart should be made as planting proceeds, and the plants placed one foot apart in the row. After they commence growing the hoe should be run through the ground to loosen the surface. The more the hoe is used the quicker the plants will grow, and they will be ready for cutting fully a fortnight earlier than those that are only hoed to keep down weeds. Applications of soot strewn over the bed in their early stages during showery weather assists growth.

During hot, dry weather Lettuces do better on borders that are not fully exposed to the sun. North borders can be selected, and if 3 inches of the sifted material of a spent Mushroom bed be laid over the soil it will keep the roots cool and moist, save much watering, and benefit the plants considerably; but those who grow large breadths for the market cannot well practise these methods. They are not essential if the ground has been well worked, liberally manured, and the hoe is kept constantly at work. *James A. Paice.*

LIME.

Lime possesses alkaline properties which neutralise or counteract soil acidity. Sour soils encourage disease in Potatos, and wherever diseased tubers were dug last season lime should be applied to the soil this season before planting commences. Wherever pig or farmyard manure, sulphate of ammonia, or nitrate of soda is used lime should be present in the soil, as without lime the manures cannot perform their proper function. Lime is especially valuable on dry land, as it helps to liberate the potash present.

Lime on a clay soil not only liberates plant food, but it assists drainage. It is well known as a fungicide and a remedy for the prevention of club root; therefore land intended for the cultivation of Brassicas, and especially the soil for the seed-bed in which the plants are raised, should receive a light dressing of lime previous to planting or sowing. Club-root often originates in the seed bed, and if not checked, may be carried to other parts of the garden when transplanting the seedling Brassicas.

Lime may be applied to the soil in several forms, the most common being that of slaked lime. For this method fresh burnt lime (quick lime) may be placed on the land in small heaps, covered with soil, and allowed to slake naturally. When it has become a dry powder mix it with the soil that covered it, and spread it evenly over the land so as just to whiten the surface soil. When small quantities are only occasionally required air slaked lime can be used, or the quick lime can be kept in a dry building until it slakes naturally, when it may be used as occasions require. *G. H. H. W.*

LEEKS

Mr. Thatcher (p. 104) states that the Leek is one of the hardiest of plants, and one of the most useful vegetables. With him, so far, I agree, but the method he advocates in cultivation is not reasonable now that labour is so scarce.

The saving of unnecessary labour is of the first importance in the cultivation of all crops, and I beg to point out to your correspondent that most serviceable Leeks may be grown without the aid of fire-heat in glasshouses or cold frames (unless early produce is required); in fact, very few cultural details described by Mr. Thatcher are required in the production of Leeks for ordinary use. Certainly the Leek requires good cultivation, but there is no need for coddling the plant. The Leek is one of the most useful vegetables for growing as a catch crop, as the plants may remain in the seed-bed without much injury until land becomes vacant.

Good serviceable Leeks may be obtained by sowing in the open during March, and when sufficiently large transplanted on well manured land into holes 7 inches to 8 inches deep made with a setting peg, in rows 12 inches apart, setting the plants out to about 9 inches apart in the rows. The plants should be well watered as they are planted. The subsequent treatment consists in keeping down weeds and stirring the surface soil on frequent occasions during dry weather. *G. H. H. W.*

The Week's Work.

THE KITCHEN GARDEN.

By F. Jordan, Gardener to Lieut.-Col. Spender Clay, M.P., Ford Manor, Lingfield, Surrey.

Potatos. In gardens in warm districts the general planting of this important crop may be proceeded with when the soil is in a workable condition. No hard-and-fast rule can be laid down, as the weather during spring changes quickly, and the nature of the ground must always be taken into consideration. Seed Potatos are cheap and plentiful, and those who recognise the advantage of a change of seed and the selection of suitable varieties will be assured of an increased crop. Early varieties with moderate tops may be planted one foot apart and 2 feet between the rows; late varieties with stronger haulm need a distance of 2 feet 6 inches between the rows. The young shoots are very tender, and a little fine soil should be drawn over them on the least sign of frost.

Peas.—Successional sowings of Peas should be made at short intervals, according to the demand, in deeply cultivated and well prepared ground. A few isolated rows, liberally treated at the roots, will produce more Peas of better quality than double the number of plants crowded together and starved. If suitable stakes are available choose tall growing varieties, as these produce the finest pods, and are the most profitable. Those who prefer dwarf varieties have choice of such sorts as Daisy, Peerless, Rentpayer, Stratagem, and those recommended in previous calendars. Early Giant, Senator, Centenary, Hercules, Glory of Devon, Stourbridge Marrow and Duke of Albany may all be relied upon, with Gladstone, Ne Plus Ultra, and Autocrat for latest supplies.

Broad Beans.—Make further sowings of Broad Beans. Seville Long Pod and Bunyard's Exhibition are large podded sorts, and amongst the most useful varieties.

Turnips.—Make further small sowings of Early Milan and Snowball Turnips on a warm border, covering the seeds with light soil or wood ash. Thin the seedlings early and make further sowings if the earlier seedlings have been checked by frost or other causes.

General Remarks Many other seeds than those already recommended need to be sown this month and in April, such as Broccoli, Kale, Brussels Sprouts, Cabbage, Cauliflower, Celery, Lettuce, Parsley, Savoy, and Spinach. A word of caution is necessary, as when plants of various kinds of vegetables are raised long before they can be finally put out, a bad start is made, and many failures may be traced to early sowing. Plants sown in April will, with ordinarily good culture, grow to a good size by the end of May, or by the time it is safe to plant them out. By all means raise early supplies where attention and protection can be afforded the crops, but the seedlings must not be neglected in any way. Small sowings at short intervals are best at this early season.

THE ORCHID HOUSES.

By J. Collier, Gardener to Sir Jeremiah Colman, Bart., Gatton Park, Reigate.

Mexican Laelias.—The majority of plants of Laelia anceps will have passed out of bloom, and any necessary repotting or top-dressing should be done as soon as new roots are observed to be emerging from the base of the last developed pseudo-bulbs. Rather deep pans without side holes filled with Osmunda or A 1 fibre cut up rather roughly will suit their requirements. Specimens growing in receptacles sufficiently large for the next season's growth should not be disturbed, but the old compost that has become loose and decayed should be removed from between the roots with a pointed stick, the small particles washed from the drainage, and new materials substituted. Plants that have outgrown their space and become open in the centre should be taken out of the pans and useless

pseudo bulbs and all decayed roots cut away, leaving only three or four behind each lead. If large specimens are desired place several growths in the same receptacles; or to increase the stock of any particular variety the portions may be potted up separately. The pans should be filled to one half their depth with clean crocks for drainage, the rhizomes resting on the surface of the compost, which should be level with the rim of the pan. Press the materials rather firmly around the rhizomes, and insert some pieces of crock at intervals to ensure a free passage of water. After repotting, water should be poured around the outer edges of the soil to induce root action. If too much moisture is applied at this stage the roots will decay, but as the season advances the amount of water should be increased, and atmospheric moisture maintained by frequent overhead sprayings.

COELOGYNE CRISTATA.—After passing out of flower plants of Coelogyne cristata will soon commence to push forth new roots from the base of the young growths, and should be repotted if necessary. Specimens that have overgrown their receptacles and are in an unhealthy condition may be broken up and the portions made into smaller plants. Healthy plants that have sufficient rooting space should not be disturbed in any way. Those that require repotting should be afforded ample drainage, and a compost consisting of equal parts good fibrous loam, Osmunda fibre or A 1 fibre, and sphagnum-moss. After repotting the plants should be shaded from bright sunshine, watered sparingly at the roots, and frequently sprayed overhead until root action commences. When well rooted they will require copious supplies of water each time the soil becomes fairly dry. This useful species is easily cultivated and has a vigorous constitution; it will thrive in almost any house with a intermediate temperature.

FRUITS UNDER GLASS.

By W. J. GRISE, Gardener to MRS. DEMPSTER, Keele Hall, Newcastle, Staffordshire.

EARLY VINERIES. Important work needs to be done now in early vineries. Assist in thinning the bunches, stopping the shoots and gradually tying the shoots to the wires. Young vines should not be cropped excessively, for although the Grapes may be satisfactory for the one year, and the berries finish well, the vines in the following season will exhibit weakness. Regulate the cropping according to the strength of the vine, remembering always that colour and finish of berry are the two essentials in Grape culture, and these cannot be achieved if the resources of the vine are taxed to their utmost. The thinning of the berries should be done at the earliest opportunity, for delay in this respect throws an unnecessary strain upon the vines. After thinning the bunches, mulch the inside borders with short stable manure, and well water them, especially portions under the hot water pipes. Damp the bare spaces twice daily with tepid water and twice or thrice weekly with diluted liquid manure. Soot water may be placed in the evaporating troughs, or syringed about the house, without wetting the bunches; soot water used in this way has an invigorating effect on the foliage.

EARLY FIG HOUSE.—The fruits on early Fig trees show signs of swelling, and the day temperature may be increased a little. On mild nights admit a little air through the back ventilators, and let the night temperature range about 65°. As the season advances, and the sun gains power, large trees growing in restricted borders will require liberal supplies of water and stimulants if the crop be a large one. Care must be exercised in feeding the roots, for an excess of stimulants would cause gross, unfruitful wood to develop. Top dressings of turf, mortar rubble, and a little wood-ash encourage the growth of surface roots that are so necessary to fruiting. If the crop is a large one, the fruits should be thinned, and it is not advisable to delay the thinning, or the fruits will fall in considerable numbers. Overcropping and spasmodic temperatures are the chief causes of fruit dropping, and I am convinced that if the thinning be done in the early stages, by removing all misshapen, badly placed fruits, and the night temperatures kept fairly steady, there will be no trouble in this respect, provided, of course, that the trees are not suffering from drought at the roots. Syringe the trees twice daily except in dull weather, and expose them fully to the light. Pinching, disbudding and removing superfluous shoots will keep the trees free of useless growth and expose the fruiting shoots to the sun and air.

LATE FIGS.—All necessary work in the late Fig house should be completed at once, and the trees made ready for starting. If the borders have been top-dressed and watered the buds will soon commence to swell. Where these late houses are heated, the amount of ventilation may be reduced at night, and, in cold weather, the hot water valves opened a little, otherwise the ventilators must be opened to their fullest extent by day and a moderate amount of air allowed to enter at night, except in frosty weather, until the season is further advanced. These late trees will only finish one crop of fruit well.

THE HARDY FRUIT GARDEN

By JAS. HUDSON, Head Gardener at Gunnersbury House, Acton, W.

THE WATERING OF FRUIT TREES.—On light soils, and where the drainage is free, many fruit trees suffer early in the season for want of water. We have had a remarkably dry spring, and the ground is hardly moist. Apricots are flowering well this year. These, and some other trees that are somewhat high and dry, on which there is an abundant show for blossom, will shortly be watered. The ground under the fruit trees should be kept well hoed, so that all available rain will penetrate, instead of passing off. Let all newly planted fruit trees be watered, if occasion arises. Do not crop vegetables too close to these trees. Where the young growth is not coming away as it ought to syringe the trees on all bright days. In the case of choice trees, or others larger trees than the average trade size have been planted, it will be advisable to mulch them at any rate for the first season. If the trees be of extra size the stems should be encircled with hay bands to keep the main stems moist. Do not be tempted to take any fruit from newly planted trees the first season, but rather try to build them up for another year's crop.

ESPALIER TRAINED TREES. See that all shoots or branches are nailed or tied in before too much sap is caused by weather trees. See also that the supporting trees are sound and not to over-specimens.

THE FLOWER GARDEN.

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

ANNUALS FOR BEDDING. Sow hardy annuals in flower beds, either broadcast or in lines. For fine seeds, such as Godetia Schammi fl. pl. (Double Rose), Silene Armeria, and Malcomia maritima, the first named method is preferable. The seeds are distributed most evenly and with least waste when mixed with fine, dry sand, and scattered over the bed or border. For larger seeds, such as Saponaria calabrica, Marigolds, Xeranthemum annuum, Nemesia, and Chrysanthemums, shallow drills should be opened and the seeds be very thinly arranged therein.

HALF-HARDY ANNUALS.—Sow half hardy annuals in shallow beds of light soil in cold frames, either in drills or broadcast. If the latter, give more space to the seedlings, and place a thin layer of light soil over the seeds. It will save watering if some shading material is spread over the sashes until the seedlings appear. French and African Marigolds, Tagetes signata, Salpiglossis, Schizanthus, Nicotiana affinis, and Zinnias succeed better when sown thinly in boxes in moderate heat. If sown thinly and transferred to a frame shortly after the seedlings appear, they need not be transplanted until they are ready to be transferred from the seed-boxes to the positions they are finally to occupy.

PRIMROSES AND POLYANTHUSES should also be sown shortly. Beds should be prepared for them on a border in the kitchen garden, the seeds being scattered rather thickly all over the surface of the beds, then patted down with the back of a spade and a very slight sprinkling of fine soil over all, which also should be patted down. I have frequently raised Carnations in a similar way, only they are sown in shallow drills, and in firm soil.

GALTONIA.—When set very early, Galtonias flower as a rule too soon to be useful in autumn. The bulbs should be buried 4-5 inches in depth, and the plants can be used effectively in a variety of ways; arranged in large groups, used as dot plants, or mixed with Gladiolus brenchleyensis. Seeds may be sown at once in the open, and left in the seed-bed until the bulbs have attained a flowering size. The little bulblets or offsets produced in many kinds of Gladiolus may be treated similarly. These are of much value for increasing stocks, and they yield finer spikes if not allowed to bloom too soon than do corms produced from flowering bulbs.

SWEET PEAS. Sweet Peas in pots should have all the fresh air possible, but with means at hand to protect them from frost or cold winds, which are injurious to them. Slight manurial applications will benefit well rooted plants. In the more northerly parts seeds may be sown in the open, allowing for the ravages of mice when arranging the seeds.

PLANTS UNDER GLASS.

By E. HARRISS, Gardener to Lady WANTAGE, Lockinge Park, Berkshire.

STOVE PLANTS. Any necessary repotting of stove plants should be done before the weather becomes warm. Prepare enough soil to pot the whole of the plants which need it, and place it on the stage at one end of the stove to get thoroughly warmed through before potting commences. A compost suitable for potting most stove subjects consists of fibrous loam, peat, decayed leaf soil, crushed charcoal and sharp sand in suitable proportions. The potting of stove plants must always be done firmly. See that the pots are thoroughly cleaned, and well drained with clean potsherds. For a few weeks after potting the plants need very careful handling; a check of any kind will cause the loss of some of the lower leaves. Lightly spray them two or three times a day with lukewarm rain-water, and frequently damp all bare surfaces in the house, to keep the atmosphere moist. Recently potted plants must not be exposed to bright sunshine until the roots are again active. Much care is necessary in watering the roots until they have become established in the new soil.

BEGONIA GLOIRE DE LORRAINE.—No time must be lost in getting the main batch of cuttings rooted. Cuttings of most plants will root more freely now than later when the weather is warmer. Cuttings of this Begonia are not so liable to damp off if they are inserted in finely sifted sand; the sand must be made quite firm, or it will dry too quickly. A batch may be grown in baskets for hanging from the roof of the conservatory, where they are very effective. A late batch of cuttings should also be propagated for flowering in small pots for table decoration.

CARNATIONS.—Young plants must be potted on before the roots become pot bound. Plants which are now growing in 3-inch pots may be transferred to 5-inch. A compost of good fibrous loam, with enough crushed brick rubble and wood ash to keep it porous, will suit them. Pot firmly, but take care not to damage the roots. Place the plants when potted on a shelf near the roof glass, and keep them shaded from bright sunshine until the roots are again active.

CYCLAMEN.—The flowering season of Cyclamen is now almost over. Before discarding the old plants, some of the best varieties should be selected for potting on. These old plants often make finer specimens than those which were raised the previous autumn from seed. After flowering, place them closely together in a cold frame and keep them rather dry for a few weeks, they may then be partly shaken out and repotted into 6-inch or 7-inch pots, according to the size of the corms. When potted, plunge the pots in ashes in a shallow frame quite near the glass, and afford water sparingly until roots are plentiful. The young plants which were raised last year must be kept growing in a genial atmosphere. Pot them on when necessary in a light compost. As the weather becomes warmer, gradually reduce the fire heat, eventually plunging them in ashes in a cold frame.

EDITORIAL NOTICE.

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

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

Special Notice to Correspondents.—*The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.*

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

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

Letters for Publication, *as well as specimens of plants for naming, should be addressed to the* **EDITORS, 41 Wellington Street, Covent Garden, London.** *Communications should be* WRITTEN ON ONE SIDE ONLY OF THE PAPER, *sent as early in the week as possible, and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith*

APPOINTMENTS FOR APRIL.

TUESDAY, APRIL 2
Scot. Hort. Assoc. meet
THURSDAY, APRIL 4—
Manchester and N. of England Orchid Soc. meet.
TUESDAY, APRIL 9—
Roy. Hort. Soc. Comm. meet.
THURSDAY, APRIL 18—
Manchester and N. of England Orchid Soc. meet
TUESDAY, APRIL 23—
Roy. Hort. Soc. Comm. meet. National Auricula and Prim. Soc. Annual Exhibition, London.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 45.6.

ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, *Wednesday*, March 27, 10 a.m.: Bar. 30, temp. 46.5°. Weather—Dull

Theophrastus.

The present time is destroying many illusions which have obscured correct perceptions in many departments of human interest. For something like half a century the alleged superiority of the German in science as well as in some other walks of life has been continuously trumpeted forth by the writers of the Fatherland till their statements have almost come to be accepted at their face value by nations whose self assertiveness happens to be inferior to that of the Teutons. In things botanical this has been greatly helped by the so called history of botany written many years ago by Julius Sachs. Everyone reading this work (of which there is an English translation) would naturally be impressed with the view that outside "German botany" there was little or nothing worthy of his serious attention. The older writers in particular are dismissed as being little more than grandiloquent muddlers. Aristotle and Theophrastus were pernicious triflers, obscuring all that was scientific by nebulous philosophy. Even Caesalpino, one of the ablest writers of the sixteenth century, while grudgingly admitted to be within measurable distance of genius, is held to have been miserably seduced from the path of science by the influence of the old Greek writers. It is with special interest, then, that we welcome the admirable translation by Sir Arthur Hort of the "Enquiry into Plants,"* which was written by Theophrastus about 2,200 years ago. A perusal of this book, now so well rendered into English, enables us to gain a vivid impression of the wealth of observation, ordered and synthesised by a very acute mind. In spite of much that is mythical and obscure, it fills us with admiration, for it is a veritable treasure-house of information and of thought which has lain practically hidden from modern botanical and horticultural students. One comes, indeed, to realise the gulf that separated the gifted and intellectual Greek from the clumsy hodmen so characteristically proclaimed by Sachs as the "German Fathers of Botany."

It must, however, be borne in mind, when attempting to appraise the importance and value of such a work as that of Theophrastus, that the methods which have resulted in the development of modern science were almost entirely undeveloped at that remote era. Facts, of course, had their value, but there was no wealth of painfully acquired experience to draw upon which should direct what we now call scientific inquiry into fruitful channels. There were no sign-posts in those days to distinguish the paths that broaden out into the wider avennes of knowledge from the many tracks that lose themselves in the morass of error.

The book is full of interesting observations and reflections, and these are enough to show how far men had even then advanced in the useful knowledge of the vegetable kingdom. Parts of it, indeed, recall chapters to be found in botanical and horticultural works written within the recollection of many of us. The main structures of plants, the stems, leaves, roots, &c., of plants are recognised, and their more important peculiarities and properties are discussed in a way in which modernity is oddly mingled with the flavour of antiquity. Although it is evident that the processes leading to the formation of the fruit were not clearly understood, it is plain that the need for pollination was at least partially grasped, and that its significance, so far as essentials are concerned, was more clearly recognised in ancient times than by the "German Fathers of Botany" some 1,900 years later.

In not a few of his chapters Theophrastus offers interesting and even instructive reading to-day. Thus in the pages devoted to timber, its qualities, and the conditions that affect its value, the discussion would hardly compare unfavourably with that to be found in more than one modern treatise. But quite apart from utilitarian considerations, the light thus cast on ancient methods of cultivation cannot fail to excite pleasure in the minds of those whose interest in botany or horticulture extends beyond current theory and practice. Theophrastus divided the vegetable kingdom into Trees, Shrubs, and Herbs, a basis of classification which persisted even in the works of our own distinguished fellow-countryman, Ray, who flourished in the seventeenth century. And, indeed, from the point of view with which the older writers were mainly concerned, it was probably as good as, if not actually better than, any other system which could have been devised.

It is naturally impossible in this place to attempt to give an adequate account of the botanical work as a whole of Theophrastus, but perhaps enough has been written to indicate the general character of the treatise that now lies ready to the hand of anyone who wants to know something of botany and horticulture as it was understood in those ancient days.

It is fortunate that the task of translation should have fallen to a scholar who is also a successful horticulturist, for no small difficulty in a work of this sort consists in the identification of the plants known to and described by the old writers. Sir Arthur Hort has attacked the problem with a considerable measure of success, and he has also made plain some of the structural features, *e.g.*, the glumes and palea of Wheat, which are somewhat ambiguously referred to in the original text.

There are a few slight errors in nomenclature, *e.g.*, in the use of the word Sycamore for Sycomore (Fig), which can easily be amended in a future issue; and most people would recognise Muscari comosum more readily as the feathered Grape Hyacinth than as "purse-tassels." But, after all, these are not very serious faults, and do not greatly detract from the excellence of the translation as a whole.

The inclusion of the book in the Loeb Classical Library is in itself a guarantee of good technical work on the part of the publisher, and the presentation of the Greek and English text on opposite pages will appeal to those who desire to compare the two. A good index of the Greek plant names, together with the key indices in English and Latin, add in no small measure to the value of a book of exceptional interest and merit.

* *Theophrastus.* Enquiry into plants, and minor works on odours and weather signs. With an English translation by Sir Arthur Hort, Bart., M.A., formerly Fellow of Trinity College, Cambridge. In two volumes. (London: William Heinemann; New York: G. P. Putnam's Sons.) MCMXVI. Price 10s.

TUESDAY'S MEETING AT THE SCOTTISH DRILL HALL.—The fortnightly meeting of the Royal Horticultural Society was held as usual on Tuesday last. The show was a small one, and there was only a moderate attendance. Orchids again constituted the principal feature of the exhibition. The most interesting plants contributed by the Orchidists were Dendrobium Alpha var. Eleanor and Brasso-Cattleya Doris Langley variety. A report of the meeting will be published in our next issue.

SUPPLIES OF SUPERPHOSPHATE.—Owing to an unexpected increase in the output of superphosphates, there is a possibility that farmers and allotment-holders may be able to secure additional supplies. They should place their orders at once with their usual merchants or co-operative societies, even if they require delivery so late as May. If merchants say that no further supplies are available, inquiry should be addressed promptly to the Food Production Department, 72, Victoria Street, S.W. 1. Superphosphates are especially valuable in increasing the Potato crop. An Order is about to be issued

nxing the prices for the sales of small quantities from merchants' stores.

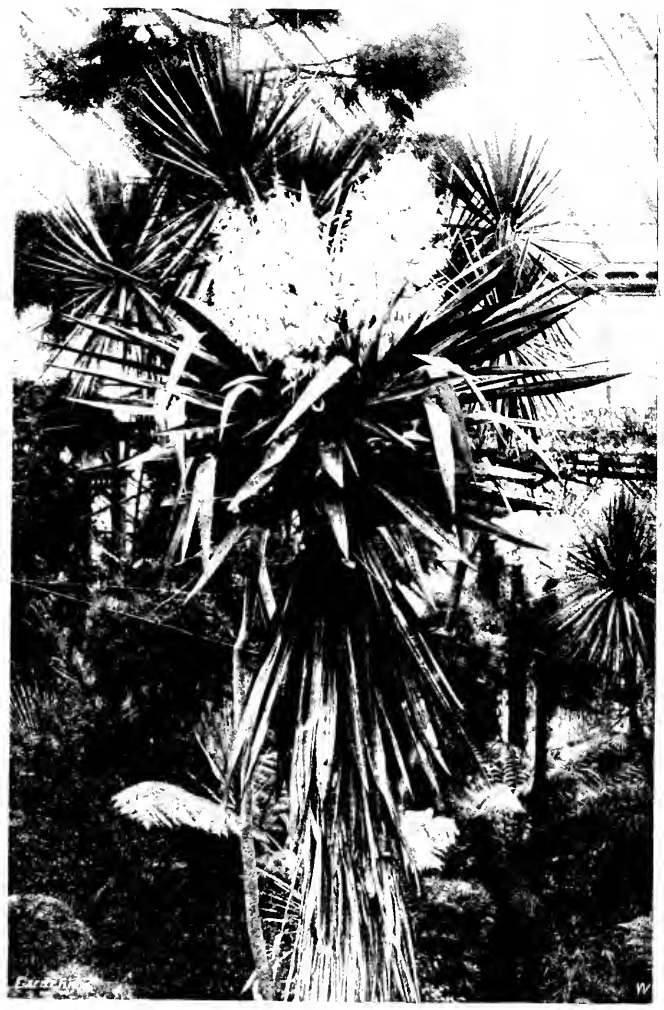
Government Prices for Potatoes.—The letter of Mr. J. R. Clynes, Parliamentary Secretary to the Ministry of Food, in the *Times* of March 20, refers to the method of payment for Potatoes of the 1918 crop to be taken over by the Government. It has been suggested in some quarters that the prices to be paid would be inequitable owing to the fact that farmers in the southern counties do not expect a crop much more than half as large as that gathered from the Fens and warp lands of Lincolnshire. As Mr. Clynes points out, Lord Rhondda's scheme provides that the purchase price of this year's Potatoes will be assessed ultimately with due regard to the size of the crop and the quality of the produce. "The intention," says Mr. Clynes, "is that a Joint Commission of the Board of Agriculture and the Ministry of Food shall visit each area in which Potatoes are grown and assess the price locally after hearing evidence from representative growers as to the yields obtained, the quality of the Potatoes and the cost of production. The prices actually quoted in the scheme are only minimum prices, and are intended to meet the case of what are ordinarily the cheapest Potatoes, for those grown on the black lands of Cambridgeshire." Mr. Clynes further points out that the "increased acreage" is to be calculated on the acreage under Potatoes in 1916, which was the largest for some years past. Consequently, farmers are likely to be treated more liberally than a mere comparison with 1917 would seem to warrant.

A Tree Yucca.—The tree Yuccas of America have their counterpart in New Zealand, where there are no Yuccas, the Cabbage or Tī trees Cordyline australis and others representing them there. The dividing line between Yucca and Cordyline is an arbitrary one. For example the plant illustrated in fig. 63, which is now known as Yucca gigantea, was for many years known in gardens as Dracæna or Cordyline yuccoides. It is represented in the Temperate House at Kew by a tall specimen which flowers every year, and is by far the largest Yucca there, being about 35 feet high, with leaves 4 feet by 4 inches and erect panicles of creamy white flowers not unlike those of Yucca gloriosa which flowers frequently in gardens. A still larger Yucca, Yucca elata, which was introduced in 1894 from a garden at Cannes, had a short career in the same house at Kew. It had a clean stem of 25 feet and 5 feet in diameter at the base, but it never became established and died without flowering. Yucca elata is one of the most remarkable and interesting trees of North America. It has the dimensions of an Oak, long and branching, 70 feet or so high, the trunk 5 feet in diameter, and the leaves, gathered in panicles 6 feet long, bear large white star-shaped flowers. In the distance the [illegible] seems a mass of fruit at the ends of the branches. There are other handsome Yuccas in the Southern United States. They are unfortunately less hardy in their native state in the south-east of the United Kingdom, and as they are not suitable for greenhouse cultivation, they, like other American plants, are beyond the pale of British horticulture. But this does not apply to Y. guatemalensis, which is as hardy in a big cool greenhouse as the tree Coniferæ. The specimen at Kew is more than 50 years old.

Allotments.—Up to last week-end 242,000 plots had been laid out for allotments under the Cultivation of Lands Order, 1917. Additional areas of Wandsworth Common, Garratt Green, Streatham Common, and Tooting Bec Common have been provisionally scheduled for allotments. Thirty-five local authorities last week agreed to take steps to acquire 440 acres of land for allotments. The largest acreage added is that of Camberwell, with 40 acres and 600 allotments. Hendon comes next with 36 acres and 540 allotments. Other figures are: Edmonton, 27 acres (405 allotments); Willesden, 24 acres (360 allotments; Enfield, 23 acres (345 allotments); Wandsworth and Reigate, 21 acres and 315 allotments each; Birkenshaw, Otley, and Bilton, 20 acres each; Willerby, 19 acres; Rotherham, 20½ acres; Hale, 15 acres; Guildford, 14 acres; Swinton (Yorks.), 11½ acres; Leyton, 11 acres; and Hellaby, 12 acres.

Soda for Potato Spraying.—The Food Production Department has arranged with the principal manufacturers of soda crystals to supply the product during the ensuing season at £4 7s. 6d. per ton net in 2-cwt. bags delivered to any station in England, Scotland, and Wales in 5-ton lots. In large cities and other approved centres lots of 1 ton and upwards will be supplied at the same price. For lots of less than 1 ton, orders should be placed with local dealers. The retail price of soda crystals sold from shop or store ought not to exceed the following: 56 lbs., 3s. 6d.; 14 lbs., 1s., 7 lbs., 6d.; 1 lb., 1d. Horticultural associations, farmers, allotment holders and others should make arrangements to combine their requirements, and to place orders at once with manufacturers or dealers for lots of 1 ton and upwards or with dealers or retailers for smaller quantities. If any difficulty occurs in obtaining supplies, the Food Production Department, 72, Victoria Street, London, S.W. 1, should be communicated with.

The Value of Soot.—Good soot contains at least 3 per cent. of nitrogen, and is specially suitable for all members of the Cabbage family and other crops as well as being beneficial to all crops during the early summer, if sown between the rows. It also darkens the colour of the soil and increases its power of absorbing heat. A dressing, equivalent to the usual application of sulphate of ammonia, would be at the rate of 10 cwt. or 40 bushels per acre, or 7 lbs. per rod. Heavy applications should not be given to the foliage of tender crops, such as Carrots, or burning may result. Soot should be stored under cover for a time before it is used on a growing crop. A good sample weighs 23 lbs. per bushel; heavier samples are usually of poorer quality.



Photograph by C. P. Raffill.

Fig. 63.—Yucca guatemalensis [illegible] at Kew.

ROYAL VISIT TO READING.

WE now give further details of the Royal visit to Messrs. Sutton and Sons' seed establishment at Reading, announced in the issue for March 16.

Their Majesties the King and Queen were received at the entrance of the premises by the proprietors, Mr. Arthur W. Sutton, Mr. Leonard Sutton, and Mr. Martin H. E. Sutton, and conducted to the Museum Reception Room, where the visitors' book was signed, and various presentations made.

After a few introductory words by the senior partner on the founding and history of the firm and the work carried on, their Majesties inspected the very interesting collection of exhibits there arranged, which comprised the wild types of Solanum, the berries and seeds of the Potato preserved specimens of tubers showing the diseases to which the Potato is liable, together with

A large collection of the seeds of all kinds of Peas and Beans showing the varying coat colours proved of considerable interest, as also did specimens and models of many types of vegetables, together with their respective seeds.

A fine exhibit of Lumière transparencies, showing many vegetables and beautiful flowers in their natural colours, was much admired, as were also the educational examples of grasses and Clovers, and the cases containing insects injurious to farm and garden crops.

Samples of radioactive ores, which at one time it was hoped would prove of manurial value were examined, as also were the many publications issued by the firm, the contrast between the first edition of Mr. Martin Sutton's *Permanent and Temporary Pastures* and the present day issue being specially marked.

After inspecting the Roll of Honour containing the names of over 220 employees on active

FIG. 64.—ROYAL VISIT TO READING. H.M. THE KING IN MESSRS. SUTTON AND SONS' SEED TESTING LABORATORY.

up to date commercial varieties, and many photographs of scientific interest.

Their Majesties were much interested in the many useful forms of the genus Brassica, such as Cabbage, Kale, Savoy, Brussels Sprouts and Broccoli.

The extraordinary development of the Beet and Mangold from the wild type, showing the range from the garden forms to the enormous roots of Mangolds used as food for cattle, together with Sugar Beet for the extraction of sugar, was of special interest.

Mr. Arthur Sutton explained the methods of selection and seed production, showing types of roots used as "mother roots" for the production of "stock seed," and the plants which are used for the growing of commercial seed.

Their Majesties then examined the wild Pea found by Mr. Sutton growing wild in Palestine, a very primitive type, and saw models of the present day varieties, pods of which have been grown up to 8 inches in length.

service, their Majesties made a tour of inspection of the various departments.

In the Shipping and Export Office the Royal visitors were much interested in a chart of the world showing every place where the firm has a distributing agency. Photographs showing the cattle in New Zealand feeding on roots grown from seeds sent out by the firm, were commented upon.

Passing through the Pea Granary, the Vegetable Seed Room was visited, where over a thousand orders are being executed daily, and where the Royal party was able to see in execution many commands from the Army and Navy Canteens' Board for seed to produce vegetables in the military districts of this country and overseas.

The Drying Room for removing the superfluous moisture from seeds before they are sent across the tropics was of special interest, as also was the large Farm Seed Order Room, where root and other seeds are got ready for dispatching to customers.

The Royal Party then proceeded to the Farm Seed Stores, which have a capacity of over 500,000 cubic feet, and noticed the enormous quantities of root and grass seeds, and inspected in detail the special seed-cleaning machinery and the process of mixing grass and Clover seeds.

The Seed Testing Laboratory was next visited by their Majesties (see fig. 64), where samples of food-producing seeds are tested before distribution, and the analytical purity determined by aid of the microscope and other instruments.

The Loading Floor, from which goods are despatched to the stations, was passed through on the way to the Pea Picking Room, where imperfect seeds were being removed from large quantities of Peas and Beans. This work is done by women.

The "Stock Seed" Room, containing all the "Mother Seeds" from which the supplies are grown, was noticed, and in the Flower Seed Order Room a large order from the Director of Graves Registration, B.E.F., for seeds for beautifying the military cemeteries in France, was being prepared for dispatching.

In the Potato Department large quantities of Potatos and Artichokes for the various base depots at home and in France were being got ready, women carrying out the work formerly done by men.

Their Majesties then saw the Despatch Office, and also the Invoice Office, where girl typists make some thousand invoices daily; passed through the Ledger Office, where about 90,000 customers' accounts are kept, and finally into the Order Filing Room, where every customer has a bundle to himself arranged on shelves on the principle of a library.

At the close of the visit His Majesty expressed the pleasure the visit had been, enabling them to see the important work the firm were doing in helping to keep up the food supply of the country.

HOME CORRESPONDENCE.

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

VARIETIES OF MULBERRY.—On p. 100 I expressed the opinion that there were varieties of Mulberry that were superior to others. I have since consulted Colonel Algernon Durand's work on *The Making of a Frontier*, and he states distinctly with respect to this fruit that there are quite superior varieties to be met with at Hunza Nagar. One in particular was called "Shaktut," "the King Mulberry," a large, luscious, purple fruit. "The very dogs feed on them," the author states. I do not in any sense mean to imply that we have not got this variety in this country, but I do think there are inferior sorts in cultivation. Colonel Durand also remarks upon a most superior Muscat Grape, and one that was "reserved for the royal family." This was at Chitral, and the Grape in question was said to have been imported from Central Asia. *J. Hudson.*

JERUSALEM ARTICHOKE.—On p. 126 it is stated that the name Jerusalem applied to an Artichoke "is considered a corruption of the Italian Girasole." Speaking for myself, I disbelieve profoundly in this derivation. I doubt if any evidence can be produced that Italians have ever called this vegetable "Girasole." I think it much more probable that Jerusalem Artichoke stands for a false Artichoke, or a vegetable resembling an Artichoke, on the analogy of "Jerusalem pony," which was an old-fashioned slang name for a donkey. Similarly, the word "Horse Chestnut" is used for a nut superficially resembling a Chestnut. Of course, if historical evidence can really be produced that this Canadian tuber was introduced originally into England from Italy under the name Girasole Artiocco I should have to reconsider my opinion, but until that is produced I shall remain a "doubting Thomas." *Vicary Gibbs.*

UNDESIRABLE APPLES.—A variety of Apple unfavourably mentioned by Mr. Molyneux on p. 66—Duchess's Favourite—is a far better Apple in the Midlands than Worcester Pear

main, and ripens at the same time. Scarlet Nonpareil is of excellent flavour in March and April if well grown and ripened, and continues the season after Cox's Orange Pippin is finished. Red Astrachan is the best in flavour of the very early varieties in this district, but should be eaten directly it comes from the tree. Bess Pool is chiefly valuable in districts liable to late frosts in spring, as it is one of the last to open its flowers. [illegible] Yellow Ingestre [illegible] Kent would hesitate [illegible] variety. *W. H.* [illegible] *H.* [illegible]

FEEDING PIGS FROM SMALL GARDENS.—[illegible] they [illegible] unfit for human food. *J. F.* talks of the buttermilk and [illegible] products be obtained [illegible] garden? [illegible] grains, Peas, Oats and Maize. [illegible] farm of the size of [illegible] acres. I have not seen a [illegible] of Maize for many months, and as for brewers' grains [illegible] *J. F.* If [illegible] had written this article [illegible] times I could have agreed [illegible] hold out such hopes [illegible] of small gardens at the present time [illegible] will be much disappointed. *T. M.* [illegible]

EARLY-FLOWERING SHRUBS.—The [illegible] weather experienced of late [illegible] noticeable effect [illegible] flowering shrubs [illegible]. Here [illegible] var. Fortunei, 10 to 12 feet [illegible] through, literally wreathed with blossom. Never before have I seen them so perfect [illegible] beautiful. Prunus [illegible] judging by the amount of buds, [illegible] be equally fine. Ribes of various sorts are gorgeous, whilst Magnolia conspicua var. Alexandrina is already opening its flower buds, and will soon be a grand sight, provided frost does not occur before they are developed. *R. H.* [illegible], *Melksham House Gardens, Wiltshire.*

HIPPEASTRUM RETICULATUM (See p. 129) mention is made of hybrids of Hippeastrum reticulatum. In the eighties of the last century more than one hybrid of this class was brought prominently forward. It was claimed for them that, inheriting the late summer or autumn flowering quality of H. reticulatum, they would greatly prolong the flowering season of hybrid Hippeastrums. One of the best known was Mrs. Garfield, raised in the then prominent nursery of Mr. B. S. Williams, of Holloway. The hybrid was said to have been obtained by the intercrossing of H. reticulatum and a garden form, Defiance. On October 11, 1881, the plant was awarded a First-class Certificate by the Royal Horticultural Society. Messrs. Veitch, of Chelsea, obtained a First-class Certificate for the variety Autumn Beauty in 1883, and for Autumn Charmer in 1885, both raised from H. reticulatum. All of these plants showed strongly the influence of H. reticulatum. Previous to those above mentioned some hybrids of the same section were, I believe, raised by Mr. J. O'Brien when in Messrs. Henderson's nursery at Maidenhead. One of the best known of these was O'Brieni. It is questionable if any of them could be obtained at the present time. It may be noted that when these different varieties were raised the genus was universally referred to as Amaryllis. *W. T.*

CROPS AND STOCK ON THE HOME FARM.

CABBAGE FOR CATTLE.

ANOTHER season, if that were necessary, has proved the great value of Cabbage for cows, pigs, sheep, and poultry. No other green crop can produce so much food for cattle on the same area. If early and late Drumhead varieties are sown early in April, the former will be ready for use in September and the late variety from November onwards. The heads kept quite good [illegible] until the early part of March, thus providing a succession of good food for [illegible]. Another point in favour of a good Cabbage [illegible] sheep [illegible]

[illegible]

[illegible] and [illegible] the soil [illegible] green [illegible] bed [illegible] entire [illegible]. When [illegible] the second and third leaf [illegible] does no harm. [illegible] better than [illegible] soil or [illegible] over the [illegible] named two weeks later. The [illegible] should be made quite firm by the [illegible] of the [illegible] wireworm [illegible] attack [illegible] I [illegible] also emphasise the [illegible] of applying the stimulants [illegible] waiting until the plants [illegible] attacked and then expect to check [illegible]

SEASONABLE REMINDERS.

VARIOUS [illegible] columns are sufficiently important [illegible] reminder that [illegible] consummation, for in the hurry of much [illegible] some may be omitted. Never within my [illegible] has such a continuance of [illegible] weather lasted during the month of March, though in 1915 we had only seven [illegible] days during that month. Last year we had only fourteen dry days, which hindered work on stiff arable land. With the continuous light frosts the surface soil has been in a favourable condition for sowing, of which full advantage has been taken.

Wheat on the whole looks remarkably well, the plants are stout, even vigorous, mainly lying near the ground, and now assuming that curl in the leaf which is so pleasing to see. Late December-sown patches have thriven splendidly [illegible] with the assistance of sulphate of [illegible] given in February these plots are very [illegible]. Any Clover, grass or Sainfoin seed [illegible] among the Wheat should be planted [illegible] for the welfare of the seeds [illegible] the advantage to the Wheat [illegible] considerable benefit from har[illegible] consolidate the soil [illegible] in seed sowing, the Wh[illegible], especially in the [illegible] possible to make [illegible] Wheat [illegible] provided it is [illegible]. Where the soil [illegible] be seen that [illegible] Wheat [illegible] for the harrow [illegible]. Some persons are afraid to harrow their Wheat, especially if the plant is thin. [illegible] the more it is pulled about [illegible] admitting [illegible]

[illegible] is germinating [illegible]. Where the plant is pale in colour, I [illegible] sulphate of ammonia sown evenly over [illegible] would greatly assist the growth; this [illegible] coupled with the customary rolling, [illegible] good effects.

[illegible] sowing of Barley and Oats should be [illegible] with all possible speed, as where this is deferred until the end of April and we have a continuance of dry weather, as is foreshadowed by some weather experts, the early growth would be checked, and that means "hedge grown" [illegible] unevenly matured at harvest time.

[illegible] of Sainfoin and Clover crops should [illegible] at once, as much growth is in progress. [illegible] the rolling does much good to an established plant, but it certainly facilitates the cutting of the Hay crop later by pressing stones [illegible] out of the way of the grass cutter.

[illegible] Autumn-sown Vetches look none too [illegible] the continuous rains in October did [illegible] early and strong growth, whilst the [illegible] experienced since have loosened the [illegible] much that firm rolling would be ad[illegible].

Now is a suitable time to sow a plot to succeed the first crop for sheep food or as green food for horses, cows or pigs in August and onwards.

Onions are such an important crop that every farm should have a plot. I purpose growing two acres, having the plants now in the seed beds to plant one acre next month, which is no doubt the best method of ensuring a crop. The sowing of the remaining batch is now claiming attention. The varieties I recommend are Bedfordshire Champion, James' Long Keeping, Brown Globe, and Rousham Park Hero. Sow 3 lbs. of seed per acre with a hand seed drill. The tilth should be of the best and the soil made quite firm by the aid of the roller during dry weather. Previous to sowing and working the surface soil artificial manures should be evenly sown over the plot at the rate of 6 cwt. per acre. Use either a concentrated fertiliser or 4 cwt. of superphosphate, supplemented by 2 cwt. of sulphate of ammonia; with the harrowing necessary to obtain a desired tilth, the manures will be thoroughly incorporated with the soil. Sow the seed in shallow drills made 14 inches apart; this distance will allow room for hoeing, which is necessary many times during the season.

ARTIFICIAL MANURE FOR POTATOS.

CERTAIN manures, such as potash, are very scarce, and apart from the various manures prepared by vendors one has to depend largely upon superphosphate and sulphate of ammonia. For Potatos I use a high-grade superphosphate (35 per cent.) at the rate of 4 cwt. per acre, 2 cwt. of bone flour and 2 cwt. sulphate of ammonia. If the bone flour is not used add 1 cwt. more superphosphate, and use a liberal dressing of sulphate of ammonia as the plants grow. *E. Molyneux.*

MARKETS.

COVENT GARDEN, March —

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 average for the week preceding the date of our report. The prices depend upon the quality of the samples, the way in which they are packed, the supply in the market, and the demand, and they may fluctuate not only from day to day, but occasionally several times in one day.—Eds.

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

	s. d.	s. d.
Ali 48's, per doz.	24 0	36 0
Aralias	12 0	18 0
Araucaria excelsa	12 0	18 0
Asparagus plumosus	10 0	12 0
— Sprengeri	9 0	10 0
Aspidistra, green	36 0	42 0
Begonia, tuberous	18 0	24 0
Cyclamens		21 0
Dracænas	10 0	12 0
Erica per colonia	36 0	42 0
— Wilhermiæ	30 0	36 0
Genistas	18 0	24 0
Marguerites, white	9 0	10 0
Mignonette	12 0	15 0

REMARKS. Many plants in pots have been despatched to the country during the last fortnight, and large quantities of flowering plants will also be required for Easter. Up to date the new lines to record, but also this week, there is a good supply of Ferns, Palms of various sizes, and flowering plants, all of which will no doubt sell freely.

Ferns and Palms: Average Wholesale Prices.

	s. d.	s. d.
Adiantum cuneatum 48's, per doz.	9 0	10 0
— elegans	9 0	10 0
Asplenium, 48's, per doz.	9 0	12 0
— 32's	24 0	24 0
— nidus, 48's	10 0	12 0
Cyrtomium, 48's	8 0	10 0
Nephrolepis	10	
Pteris, 48's	12 0	18 0
— 32's	24 0	36 0
Pteris, in variety, 48's	8 0	12 0
— large pots	4 0	5 0
— small 60's	3 0	4 6
— 72's, per trays of	2 0	2 6
Table ferns	2 0	3 6

Cut Flowers, &c.: Average Wholesale Prices.

	s. d.	s. d.
Anemone fulgens, per doz. bun.	4 0	5 0
Arums — (Richardias), per doz. blms.	8 0	10 0
Azalea, white, per doz. bunches	5 0	6 0
Camellias, white, per doz.	2 6	3 0
Carnations, per doz. — blooms, best American var.	2 6	4 0
Croton leaves, per bun.	1 3	1 6
Daffodils (single), per doz. bun — Barrii	3 0	5 0
— Emperor	4 0	5 0
— Golden Spur	3 0	4 0
— Princeps	3 0	4 0
— Sir Watkin	3 0	4 0
— Victoria	5 0	6 0
Eucharis, per doz. blooms	3 0	4 0
Freesia, per doz. bun.	3 0	4 0
Heather, white, per doz. bun.	9 0	12 0
Lilium longiflorum, long	7 0	8 0
— — rubrum, per doz. long	4 0	5 0
Lilium — in — short, per doz. blooms		2 0
Lily of the Valley, per doz. bun	30 0	36 0
Narcissus, Grand Primo per doz. bun.	3 0	4 0
— ornatus	4 0	6 0
— Soleil d'Or	3 0	4 0
Orchids per doz. — Cattleyas	12 0	18 0
— Cypripediums	4 0	6 0
Pelargoniums, double scarlet, per doz. bunches	12 0	18 0
Roses, per doz. blooms — Général Jacqueminot	3 0	4 0
— Lady Hillingdon	4 0	5 0
— Ladybird	6 0	10 0
— Niphetos	3 0	4 0
— Richmond	6 0	8 0
— Sunburst	6 0	12 0
Tulips per doz. blooms — Darwin, various	3 6	4 6
— single, white	3 6	4 0
— — Yellow	2 6	3 0
— — Pink	2 6	3 0
— — Red	3 0	4 0
— Double, red	3 6	3 0
— — yellow	4 0	4 6
Violets, per doz. bun.	4 0	5 0

French Flowers: Average Wholesale Prices.

	s. d.	s. d.
Anemones, double pink, per doz. bun.	2 6	3 0
— single, mixed	5 0	6 0
Mimosa (Acacia), per basket	5 0	7 0
Narcissus, per basket		
— Paper white	12 0	15 0
Ranunculus carmine, per doz. bun.	6 0	8 0
— scarlet	15 0	18 0
Stocks, white, per pad	9 0	12 0
Violets, Parma, per bun	4 0	5 0
— Czar Allium, per pad	10 0	12 0

Cut Foliage, &c.: Average Wholesale Prices.

	s. d.	s. d.
Adiantum (Maiden hair Fern) best, per doz. bun.	10 0	12 0
Asparagus plumosus, long trails, per half-dozen	2 6	3 0
— — medium, doz. bunches	18 0	21 0
— Sprengeri	10 0	15 0
Berberis, per doz. bun.	6 0	8 0
Carnation foliage, 6 bunches	4 0	5 0
Cycas leaves, per doz.	3 0	6 0
Ivy leaves, per doz. bunches	2 0	2 6
Moss, grass bun	7 0	8 0
Smilax, per bun. of 6 trails	2 0	2 6

REMARKS. Large quantities of cut flowers will be required this week for the Easter festivities. White flowers will be the chief attraction, and high prices are anticipated for the best blooms of Richardias (Arums), Lilium longiflorum white Roses, Carnations, white Tulips, and Lily-of-the-Valley. Coloured varieties will also advance in price. Home-grown Daffodils, which are now arriving in good condition, should be sufficient for the demand. Roses and Carnations are arriving in excellent condition, but the cooler we other may check the supplies before the week-end. Amongst the French flowers, White Stock, Star of Bethlehem (Allium), and coloured Anemones should sell freely.

Vegetables: Average Wholesale Prices.

	s. d.	s. d.
Artichoke, Chinese (Stachy) per lb.	1 3	1 6
— Globe, per doz.	4 0	6 0
— Jerusalem, per ½ bushel	2 6	3 0
Asparagus (English), per bundle	8 0	10 0
— Iturio	5 0	10 0
— National, per bundle	12 0	14 0
— (Paris Green), per bundle	7 0	8 0
Beans: — — Broad, per pcl.	7 0	8 0
— — French (Channel Islands), per lb.	2 0	2 6
Beetroot, per bus.	3 0	3 6
Carrots, new, per doz. bunches	4 0	6 0
— per bag	4 0	5 0
Cauliflowers per doz.	3 0	6 0
Celeriac, per doz.	7 0	8 0
Celery, per bundle	2 6	4 0
Chicory, per lb.	0 8	1 3
Cucumbers, per doz.	9 0	12 0
Endive, per doz.	2 0	—
Garlic, per lb.	0 8	—
Greens, per bag	3 0	4 0
Herbs, per doz. bun.	2 0	4 0
Horseradish, per bun.	3 0	4 0
Leeks, per doz. bun.	4 0	4 6
Lettuce, Cabbage, per doz.	1 6	3 6
Mint, forced, per doz. bun	4 0	6 0
Mushrooms, per lb.	3 0	4 0
Mustard and Cress, per doz. punnets	1 0	—
Onions, French, per cwt.	20 0	24 0
— spring, per doz. bun.	2 0	3 0
— Valencia, per case (4 tiers)	33 0	35 0
— (6 tiers)	33 0	35 0
Parsley, per strike	2 6	3 0
Parsnips, per bag	4 0	5 0
Potatos, new, per lb.	0 10	1 3
Radishes, per doz. bunches	1 6	3 0
Rhubarb, forced, per doz.	1 6	1 9
— natural, per doz.	3 0	4 6
Savoys, per tally	8 0	12 0
Seakale, per punnet	2 0	2 3
Shallots, per doz. lbs.	8 0	14 0
Spinach, per bus.	5 0	6 0
Swedes, per bag	2 0	3 0
Turnips, per bag	4 0	5 0
Turnip tops, per bag	2 0	3 0
Vegetable Marrows, per doz.	12 0	15 0
Watercress per doz.	0 10	—

Fruit: Average Wholesale Prices.

	s. d.	s. d.
Almonds per cwt	150 0	—
Apples: — — English, per bus.	2 0	4 0
— — Kessels French, mackerel about 60 to 70 lbs	4 0	5 0
Dates, per box	1 3	1 3
Grapes — Almeria, per barrel (½ doz. lbs.)	55 0	70 0
Grapes, con — — Gros Colman, per lb.	6	9 0
Lemons, per case	40 0	48 0
Nuts, Barcelona, per bag	130 0	—
Oranges, per case	100 0	120 0
— strawberries forced per lb.		0 20 0
Walnuts kiln dried, per cwt	100 0	110 0

REMARKS. Supplies of English Apples are decreasing daily. Prices likewise are on offer, but are unchanged. Gros Colmar Grapes are still in the market, but supplies are very small. Early arrivals of Almeria (Spanish) Grapes are meeting ready sale. English and Continental Strawberries are also coming forward, and supplies of forced Strawberries are much more plentiful, and supplies of Vegetable Marrows are increasing. Fair quantities of Cucumbers are on offer, but supplies of Mushrooms are short. Chicory and Cauliflowers are fairly plentiful, and Asparagus is also in evidence. E. H. R.

Covent Garden Market, March 27, 1918.

Obituary.

W. DANIELS—We regret to announce the death of Mr W. Daniels, Park Superintendent and Cemetery Registrar, Dewsbury. He died on the 15th inst., aged 69 years. Mr Daniels had been superintendent of Dewsbury Park for 13 years.

W. JAMES EWART. We regret to announce the death of Mr W. J. Ewart, a well-known Scottish gardener. Mr Ewart was gardener to Miss Dawson at Powfoulis, Falkirk, for over thirty years, and was an excellent all-round gardener and a successful grower of Orchids, particularly those of the cool section. Deceased, who was 72 years of age, has left a widow, two daughters, and two sons. A third son was killed in action at Loos while serving as a sergeant in the Cameron Highlanders.

RONALD BIRKINSHAW.—We regret to announce the death of Mr. Ronald Birkinshaw, eldest son of Mr T. W. Birkinshaw, gardener at Caldecote Towers, Bushey Heath. Deceased was a signalman in the Navy, and his ship was sunk recently, his name being afterwards conveyed to his relatives as among those lost. Before the war he was employed in the gardens at Hatley Park, Hickleton Hall, Hutton Hall, and Mote Park.

GARDENING APPOINTMENT.

Mr G. W. Baxter, for the past two years Gardener to A. A. EMBIRICOS, Esq., Hautetville, Harrietsham, Kent, is Gardener to W. BURGESS, Esq., The Lodge, Farnham Royal, Slough, Buckinghamshire.

SAFFRON WALDEN, BISHOP STORTFORD AND DISTRICT FARMERS' AGRICULTURAL ASSOCIATION.—At the ninth annual meeting of this Association, the report of the committee of management showed that it is in a flourishing condition, with a membership of 338 and a turnover for the year of £55,257, on a paid up capital of only £88. Mr A. S. Corbett, General Director of the Agricultural Organisation Society, to which the association is affiliated, congratulated the members upon the results of the year's working, and said the principle of co-operation among farmers was spreading

ENQUIRY.

WILL some readers kindly advise as to the best variety of trout for an inland lake of about 3 acres? There is a fair supply of fresh running water. About what number of fry and one-year-olds would be a good stock for this area of water? Also when is the best time to place the fish in the lake? Where can a reliable supply be obtained near to the district of Godstone, in Surrey? Any other information would be acceptable. *J. E.*

ANSWERS TO CORRESPONDENTS.

APPLES: *A. L. S.* The Apple known as French Russet is not very commonly grown in Leicestershire, but the old Royal Russet, which is very similar, does well in that county. There are, however, many better varieties of Apples than either of these Russets, and you would do well, especially if your orchard space is limited, to choose Apples which would yield a more remunerative return.

CAMELLIAS AND GENISTAS: *C. M. L.* Both these plants may be propagated from cuttings inserted in September. Cuttings of Genistas should be placed in a gentle bottom-heat until they are rooted, which may not be until the following spring. In the case of Camellias, choose well-ripened growths without flower-buds, insert the cuttings in sandy soil, and place the cutting-boxes or pans in a cold frame until the following February, when they should be introduced into gentle bottom-heat. The shoots will soon form roots in moderate warmth. Care must be taken to protect the cuttings from frost during the winter. Genistas may, if desired, be treated in the same manner as Camellias, but are better placed direct in bottom-heat. Use clean silver sand or very sandy soil for the soil in which the cuttings of both plants are inserted.

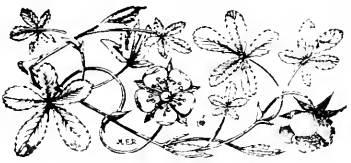
DAMPING OFF: *C. F.* It is true that an excessive amount of atmospheric moisture is the commonest cause of damping off in seedlings, but this condition can also be brought about by keeping the soil too moist, or by allowing the seedlings to grow too thickly together. Occasionally the seedlings fall over as a result of wire-worm or eel worm at the roots; you should examine your seedlings and make sure that they are not attacked in this way. We would advise you to keep the soil drier, and to examine the pans each day, remove any seedlings which have damped, and sprinkle a little wood-ash and charcoal over the vacant space. Keep the house well ventilated; a high temperature is not alone sufficient to keep the atmosphere dry. With reference to your second question, you should apply to the makers, viz, the Molassine Company, Ltd., 28, Mark Lane, London, E.C. 3.

NAMES OF FRUITS: *J. T.* Winter Greening (syn. French Crab)—*H. K.* Sturmer Pippin.

TOMATOS: *M. W.* The Tomato leaves are affected by disease, and they have also the appearance of having been attacked by aphides. Spray the plants with liver of sulphur in the proportion of half an ounce to 2 gallons of rain-water, and add a large tablespoonful of soft soap, mixing the whole well together. Attend carefully to the ventilation of the house, for the plants need plenty of fresh air; a moist, stagnant atmosphere is unsuited to the Tomato, and favours the spread of disease.

WATERING PEACH TREES: "*In Doubt*," *Dublin.* Peach trees should be well watered just before they come into bloom; this watering will generally carry them over the flowering period, but on no account should the roots be allowed to suffer from drought even when the trees are in flower. Fork the borders lightly in which old Peach trees are planted, apply a dressing of artificial manure, and water the soil copiously. It is not absolutely necessary to pollinate the flowers to obtain a good set of fruit; much depends on the weather, but best results generally follow this practice

Communications Received.—W. D. & S.—C. J. W.—Japonica—H. E.—Hertus—S. A.—A. B. W.—W. W.—E. H. H. W.—A. C. B. H. W.—J. F.



THE

Gardeners' Chronicle

No. 1642 SATURDAY, APRIL 6, 1918

CONTENTS.

ILLUSTRATIONS.

NOTES FROM KEW.—IV.*

THE Kew season opens at Easter, when, given reasonable weather in March, there is certain to be a feast of flowers for the crowds that visit the gardens. The average number of visitors to the gardens since a charge for admission was instituted is less than one-tenth of what it was in pre-war times. The numbers on last Good Friday, Saturday, Easter Sunday and Monday were: Friday, 3,696; Saturday (a wet day), 264; Sunday, 1,572; Monday, 10,650. For comparison I give the numbers recorded for the same days in 1914: Friday, 62,700; Saturday, 21,800; Sunday, 68,590; Monday (Bank Holiday), 147,765. Although a great falling off is revealed by these figures, it speaks well for Kew and for our people that so many came to see the gardens with the clouds of war hanging heavier than ever.

The allotment workers digging their plots on the green in front of the main entrance to the gardens on Good Friday were a surprise to many visitors. Kew Green is more stone gravel and sand than clod; still, no stone, no clod must remain unturned where good can be got out of it. Cabbages and Potatos do well on maiden soil, though poor, therefore the well-to-do Kew folk who, coats off, have tackled Kew Green need not feel that they are working in vain.

Further indications of the same kind inside the gardens are the ploughed up lawn in front of the Palace, where Potatos will be planted next week, and the empty flower beds, which formerly were filled with Tulips, Daffodils, Hyacinths, and other spring flowers, and now waiting to be planted with vegetables. Everywhere else Kew presents much the same features as it did in pre-war Easters. In No. 1 house, near the main entrance, the Aroids are looking little the worse, although visitors are not permitted to see them. The big tree of Amherstia nobilis never promised better for a display of flowers next month, and a good number of Anthuriums are in bloom. The Belladonnas in the border in front of the house are well advanced in leaf growth. To the left, in the enclosure where the historical Corsican Pine stands, the great expanse of Daffodils is rapidly approaching perfection, and the double-flowered red Peaches and groups of Forsythias in the shrubberies are good to see.

The most beautiful flowering tree in Kew at the present time is the Japanese Prunus subhirtella. It is so elegant, its branches evenly disposed, yet in no sense stiff or formal, and its pale pink flowers, almost white in the distance, are delightful. This is a tree for the villa garden as much as for the park, and it ought to become a rival in the affections of the people with Laburnums, Lilac, Almond and Hawthorn. There are many trees of this Prunus scattered over Kew, there is a particularly fine group of it south of the Palace lawn, with double red and white Peaches for companions. The Birches, with their white, brown and blackish trunks, are worth attention, the Kew collection being a particularly good one, and most of the trees are of fair size. The Elms also are worth inspection, some of them, particularly Ulmus montana vegeta, the Huntingdon Elm, and Wheatleyi, Wheatley's Elm, are far better than the English and Scottish Elms as trees for parks or roads. Groups of flowering shrubs growing among the collections of trees are a noteworthy feature at Kew. Berberis, Broom, Forsythia, Spiraea, Lonicera, Magnolia, Philadelphus, Ribes, and others have been planted in masses here and there for decorative effect and they are quite a success.

The Rhododendrons in the Dell looked plump and happy on Sunday after the drenching rain of the previous day. Some of the early ones were in flower, R. Fargesii, strigillosum barbatum, campanulatum, niveum, Davies' Early White, Handsworth Early Red, Rosa Mundi, The Countess, Luscombei (a grand bush, covered with bloom, and a number of smaller ones, a yard or so high, equally floriferous, proving the merits of this hybrid); Altaclarense, an old bush, laden with dark red flowers; Smithii album, a white arboreum cross, also old; and several big veteran early Arboreum crosses, red flowered and gay, but nameless. The best of a set of hardy varieties obtained from Messrs. Seidel, Dresden, about ten years ago, is one named Professor D. Reichenbach, but I am afraid it would not stand a chance against the Waterer class. England stands a long way ahead of all other countries in the breeding of Rhododendrons. Camellias in full flower in the Dell are puzzling to visitors, who are as surprised to find them growing and flowering in the open air here as they would be to find parrots in the woods.

There are jays and pheasants in the woods at Kew, and hares have been shot there recently. Birds of many kinds are numerous, especially blackbirds, and they are as destructive as monkeys, or the grey squirrels which have taken possession of Kew as rats do of a barn where poison, traps, and the gun are not used. However, like Lysander Pratt, we can find good in bad and bad in good, and the squirrels, like the geese and ducks, are a source of amusement to some visitors; the blackbird's singing charms most people, and hares and pheasants have in these times a real value. For his size, the tit-mouse does a big lot of mischief in the garden. He pecks holes in the Rhododendron flowers to get at the honey secreted at the base, and he prefers the honey of the red-flowered sorts to all others.

Bamboos at Kew no longer excite the experts, who appear to have learnt all they wish to know about them. It is to be feared that Bamboos are untidy plants, looking decidedly dishevelled in early summer, which is intolerable in the well groomed gardens. They show up best in winter, and a good quartet of them is nitida, fastuosa, which is 15 feet high at Kew, nigra, and japonica, or Metake, as it is still called in the nurseries. Nitida is a most elegant plant, quite unlike anything else, its clusters of bluish, quill-like stems supporting a canopy of thin, graceful foliage, being admirable. The four sorts named stand the weather better than any others at Kew.

The Azalea garden is worth visiting now if only to see the Magnolias. M. conspicua, Soulangeana, and stellata, are already in flower, and the others will soon follow. Speaking of Magnolias, one cannot but say specially nice things of stellata, which at Kew is a champion shrub. There are large beds of it on several of the lawns, it is plentiful in the shrub borders, and it is one of the very best forcing plants I know. The weather often spoils the effect, frost turning its snow-white flowers brown, and heavy rain or strong wind pounding most of the beauty out of them. All the same, it is a glorious, early flowering shrub.

In the garden round King William's Temple are the Chinese Rhododendrons. Few are in bloom: lutescens, an elegant, twiggy, small-leaved shrub with cowslip-yellow, Azalea-like flowers; Keiskei, a yellow-flowered, prostrate little plant, just the thing for a rockery; Fargesii, with crimson buds, and pink, open flowers; adenopodium, a good pink, with felted leaves; rubiginosum, pink, with big red anthers; racemosum, and intricatum (see fig. 65). My boy called the last-named "blue Heather." It is a great catch from the Far East; some good judges declare it is the pick of the whole of the Chinese Rhododendrons so far. Decorum looks very promising, its fat buds holding back wisely till the weather is safer, its fellow countryman, adenopodium, having been spoilt by frost through being earlier. Other noteworthy Rhododendrons flower

*Previous articles appeared in the issues of January 19, February 9, and March 9.

ng in the same part of the gardens are dilatatum, a showy plant of the Swamp Honeysuckle type; fulgens, and Metternichii. Near by in the same bed as the Witch Hazels are several bushes of Corylopsis Willmottiae bearing yellow, Hazel-like tassels. It is probably a good border shrub for this country.

Among the Spiraeas, Thunbergii and arguta are the only two species in flower, and there is nothing yet to catch the eye among the Leguminosae. Osmanthus Delavayi, an evergreen with small, ovate, dark green leaves and numerous branchlets, each bearing a little cluster of snow-white, very fragrant flowers, is happy against a south wall, though it is probably quite hardy

The plants in the rock garden are coming on fast. Frost has not done any appreciable harm, and the rain last week has made the plants generally wake up and get to business. There are good groups in flower of Primulas cashmeriana, denticulata, and its two varieties superba and alba, rosea, chumanthia, Auricula (type) frondosa, and the blue and yellow forms of the common Primrose. Chionodoxas Lucilae and sardensis are now almost weeds here, and the ground in places is blue with their flowers a week or two ago. Anemone Pulsatilla clothes a slope at the south end, and the white variety occupies a "pocket" lower down, with the yellow Bungeana near by. These are now in full bloom, and

FIG. 65.—RHODODENDRON INTRICATUM: FLOWERS PALE LILAC (NAT. SIZE.)

(See p. 143.)

Magnolia Kobus is also flowering freely against a wall, with a good crimson Cydonia japonica and the double-flowered Prunus triloba for its companions. In a villa garden close to the Victoria Gate a crimson Double Peach and Magnolia conspicua show that Kew has some local influence, but it really is surprising that Kew does not exercise more on gardens generally, seeing how easy it is for the thousands of visitors to become informed as to what plants will grow and are to be obtained from nurserymen. Is it that they are satisfied with the same old beef-and-beer and bread-and cheese plants in their own gardens, and come to Kew for the same reason as they go to the Zoo?

the rare A. obtusiloba petiolis, from Burma, is in bud. Saxifraga hirsuta, formerly called Stracheyi, is as good this spring as ever it has been at Kew, and the true Stracheyi is also to be seen for comparison. Omphalodes verna, both blue and white, is happy under the shade of a Yew, a similar position agreeing with Anchusa myosotidiflora. A short stemmed, big headed Aster-like plant, Townshendia Wilcoxiana, from N. America, ought to find favour with rock gardeners, and Corydalis tuberosa alba is another plant with distinct claims. A group of Bulbocodium citrinum, perhaps the pick of the hoop petticoat Daffodils as a rockery plant, is one of the best pictures in the rock garden. If there is a better it is the great patches of Erica carnea at the north entrance to the rockery, but we must not call this a rock plant.

THE COLLECTIONS INDOORS.

Proceeding to the houses, we may begin with the Alpine House, where there are many choice gems in bloom. For colour, Primula Mrs. H. J. Wilson, a viscosa or hirsuta cross, is an easy first, others of the same breed being less bright. That wonderful parasite Phelypaea foliata (see fig. 66) is in bloom. It flowered magnificently and for the first time at Kew in May, 1914, standing up on the border at the back of the rockery like a bunch of bright scarlet Gloxinia flowers springing from a rosette of the feathery leaves of Centaurea dealbata, the host plant. Seeds of host and parasite are sown together, and the Centaurea is then kept going till the Phelypaea springs up two years later. Its home is the Crimea and Caucasus, and seeds of it may sometimes be obtained from the Tiflis Botanic Garden.

In the Succulent House (No. 5) various Aloes are in bloom; the tree of Diospyros Kaki promises to have a big crop of fruit this season; Asparagus declinatus hanging round a high pillar is the perfection of elegance; and two other climbers, Petrea volubilis and Juanulloa aurantiaca, the former against the roof, the latter trained up a pillar, are worth seeing. This house has felt the war worst of all. Some things have had to go short, and the succulents have gone shortest. The consolation is that they will get over it.

No. 4, the people's conservatory, is quite a flower show. Hard wooded plants are well represented; there is a big group of well-bred Hippeastrums; many specimen plants of Eupatorium Ruellia, with big heads of blue-purple flowers; Primula sylvicola, which is only P. sinomollis with a second name, P. kewensis and its parent verticillata, P. obconica and P. malacoides are in fine floral array; Arctotis aureola, a glorified Marigold; big bushes of Impatiens, Eranthemum pulchellum, Prostanthera rotundifolia, a grand lot of Begonia manicata, the merits of which as a winter-flowering plant are little known, because the plant is generally starved; Isolomas, a yard high and well flowered, are the most conspicuous of the show things in this house.

Plants in the T Range are still generally in their winter sleep, so I mention only a few this month: Clerodendron myrmecophilum, with erect racemes of orange-red flowers; a hybrid Columnea which bears further testimony to the merits of this genus under the operations of the breeder; Streptocarpus Holsteri, which is no more a Streptocarpus than a robin is a nightingale, whatever the systematists may say; Begonia venosa, remarkable for its large, ear-shaped, frosted leaves and very conspicuous membranous, strong-nerved, inflated stipules, which sheathe the stem as a young Bamboo culm is sheathed; the white flowers, on long, reddish, erect peduncles, are just ordinary.

When mentioning the Clivias in the Temperate House last month, where they continue to be a great attraction, I remarked that more variety of colour ought to have been the outcome of the efforts made to improve C. miniata. I might have mentioned also the cream-yellow flowered Clivia which was introduced from Zululand to Kew about twenty years ago and was noted by me in *Gard. Chron.*, April 15, 1899, p. 223. It has flourished at Kew ever since, and seedlings raised there have flowered and proved true to type. All attempts to cross it with the darker-coloured varieties have failed. There is a fine example of it in flower in the Begonia House now, and I believe it to be a distinct species, differing from C. miniata in not developing offsets, the more crowded umbel of flowers, and in the perianth being much shorter and the segments more reflexed at the tip. There is also the colour difference. Properly grown, this distinct-coloured Clivia is a

first-rate garden plant. It likes more warmth than miniata, stove treatment suiting it perfectly. Breeders of Clivias ought to try their luck at crossing it with the other species, for it does not follow from our failure at Kew that the cross cannot be accomplished: indeed, we have not given up hopes yet, for the attempt has been made again this year.

Mention must be made of a few of the Orchids in bloom. Pleione yunnanense is flowering when all the other species are in full growth: Liparis nuda ntha, which Kew owes to Mr Elwes, is the best of its genus, which is not saying much, perhaps; Cymorchis kewensis is uncommon-looking and is not unattractive. Other interesting Orchids are the blue Dendrobium Victoria-Regina, the fringed yellow D. Hargravianum, the madder-yellow D. Thwaitesii, several good spikes of Renanthera Imschootiana, Cymbidium eburneum with eight perfect flowers, a fine example of Cypripedium Parishii, and a new good Odontioda. Brassia Crawfurdii, in the Palm House, continues to astonish visitors who call it a kind of Rhododendron, taking it only the big bunches of flowers and not the true foliage.

In the Temperate House the Himalayan Rhododendrons and the hybrids raised from them are the great feature. At present the hybrids have it, more especially Mr. G. Sidoli Fulmonti. His Glory of Penjerrick, Girls' Triumph, and Beauty of Tremough are three kings of their kind. He has lately added a fourth named Ernest Gill, after his soldier son who had he been Sir William Roberts himself, could not have asked for a better floral compliment. In a corner of the rock used Lysichitum camtschatcense, or the yellow-spathed Arum from North America, is again in flower. It is also flowering in the swamp outside, proving both hardiness and adaptability in a plant which stands well among the Aroids for showiness. In the Mexican end of this house Bruntelsias are the best shrubs in flower. They are planted out, and they do not mind shade. The true Howea Belmoreana, lately figured in the *Botanical Magazine*, is still in bloom: it is quite distinct from H. Fosteriana with which it had formerly been confused, probably owing to the seeds of both having been collected together in those early days on Lord Howe's Island and sent here as Kentia seed simply. I have frequently been assured that the two plants were only varieties of one species as both came up from the same lot of seeds. W. W.

ORCHID NOTES AND GLEANINGS.

LAELIO-CATTLEYA PLUTO.

A flower of this pretty new hybrid raised between L.-C. Dominiana (L. purpurata × C. Dowiana) and L.-C. Firebrand (C. Trianæ × L.-C. Ingbirdiensis) is sent by Baron Bich, Esq., Ashtead Park, Surrey (Orchid grower, Mr. W. H. White). The bloom is more than 5 inches across and the petals nearly 2 inches wide. Both the sepals and petals are old-gold colour with a tinge of rose, the petals having a dense spotting of reddish-rose. The neatly formed lip is purplish-mauve with thin dark lines on a yellowish ground at the base. The fleshy column is white, and the pollinia is scarcely distinguishable from true Cattleya, there being three species of Cattleya and two of Laelia in the parentage of the cross. As usual, however, the orange fire of L. cinnabarina through L.-C. Ingbirdiensis takes possession of the colour.

CYPRIPEDIUM TOM WORSLEY.

T. Worsley, Esq., Carter Place, Haslingden, sends a flower of this handsome hybrid between C. Actæus langleyensis (insigne Sanderæ × Leeanum) and C. Helen II. (insigne Chantinii × bellatulum), which is now fully matured and displays a marked improvement over the first flower of 1916. Two features are specially noticeable, viz., the breadth of petals inherited through C. bellatulum, and the clear, pale-yellow ground colour following the C. insigne Sanderæ in C. Actæus langleyensis. The dorsal sepal is white with a pale yellow base and lines of oblong purple blotches, and the petals, which are each 2½ inches long and 1½ inch wide, Primrose-yellow, changing to cream colour towards the tips, and having slight dotted lines of purple. The lip and staminode are light yellow, the latter having an orange-coloured keel in the centre.

FIG. 126.—NOTES FROM KEW.—PHILYDRUM FLUVIATILE, A SCARLET-FLOWERED PARASITE, GROWING ON CONVOLVULUS FLAGELLIFORME. (See p. 134.)

THE MARKET FRUIT GARDEN.

It is seldom noted that we are favoured with an early and sunny March as the month that has just passed away. The record of my private station extends back for eighteen years, and during that period no March has equalled the past month in meteorological advantages. The great majority of the days were sunny, and some were quite warm, while up to the night of the 27th rain had fallen on only five days, amounting to no more than 0.26 inch. For the 28th 0.32 inch were measured, followed by 0.42 inch on the 30th, and the totals for the month were only 8 rain days, and a total fall of 1.02 inch. Frost, 2 to 5 degrees, was registered on the screen only four times. The wind was very cold at times, even on sunny days, but this is almost invariably the case in March. The nearest approach to the favourable conditions of the latest March was in 1900, at least in dryness, for in the March of that year rain fell on only five days, amounting to no more than 0.60 inch. That month, however, was a very cold one, and there was hardly any sunshine. The rain of the end of last month was needed to soften clods in fields, and to bring up seed in fields and gardens. For all kinds of work on the land—ploughing, sowing, planting Potatos, cultivating orchards, and hoeing, the conditions have been excellent, and they cannot fail to have a marked effect upon the food supply of the country, while they have enabled fruit growers who have had sufficient labour to transform orchards from an exceptionally grassy and weedy condition to one of uncommon cleanness for the time of year.

PROGRESS OF VEGETATION.

Previous to March the season seemed likely to be a somewhat backward one in the development of fruit and flowers. Even now that the past sunny month has promoted advance greatly, the chilly nights have checked the effect of the sunshine, and my chronicles show many years of rather less development in the latter part of March than has been seen this season.

RECORD PRICES FOR APPLES.

In the latter part of March Bramley's Seedling and Newton Wonder were quoted in London up to 30s. per bushel, as the top price for very choice lots. This, I believe, is a "record"

wholesale price for cooking Apples. The price named for Bramley's was given in the price list of the Board of Agriculture for the week ended on Wednesday, March 27. The prices quoted in this list are usually lower than those of trade papers, and often below what I have obtained.

THE SPRAYING SEASON.

The fruit grower's tribulation is beginning, if it was not begun earlier in the form of winter spraying, which I missed for the first time this season. There were several reasons for missing it. In the first place birds have not touched a fruit bud on Plums, so far as I have seen in many careful inspections up to the last week of March, by which time the blossom was on the point of opening, a stage in which it is not harmed by birds. In the next place, the only benefit of winter spraying observed by me is that of clearing moss off the trunks and branches of trees, and spraying in alternate years would suffice for that purpose. Then there were deterrents in the very high prices of spray-stuffs, the great rise in wages, and the scarcity of male labour. But now it is necessary to spray against injurious insects where these are noticed to have begun their work of injury. Experiments in the United States, in two seasons, proved that the only successful operation to control the aphis on Apples is that of spraying when the pest is found outside the unopened blossom buds, just showing in very compact form immediately after the bursting of the fruit buds. The statement in the report of the experiments is that the aphides are then outside the buds, waiting to obtain an entrance, so that they can be easily wetted by the spray-fluid and killed. Knowing from costly experience the futility of spraying after aphides have had time to curl the leaves, it was my intention to spray against them at once after finding any considerable number of them in a vulnerable position. But, whatever their disposition may be in the United States, they are not accommodating enough in my orchards to remain outside fruit buds a day after these have burst. At least, that is the case with the majority of them, and it does not answer to spray for the minority only. As soon as the tips of the blossom buds in their compact clusters show, as they do immediately after the bursting of the fruit buds which have enveloped the clusters, the aphides creep in among those tips, or between the embryo leaves encircling them, and are thus more or less protected against spray fluid. By the way, it would be a great advantage if all writers on fruit would distinguish between "fruit buds" and "blossom buds," limiting the former term to what may be termed the parent buds—the compact parent buds—and the latter to the clusters of buds which will become blossoms. Now, only in one piece of Worcester Pearmains were aphides found to any considerable extent outside unburst fruit buds, and then not in one out of ten buds. Where the fruit buds had burst it was necessary to pull apart the blossom buds, as a rule, to find aphides, and in the course of that operation suckers, thrips, and caterpillars were occasionally found. Therefore, if only for the destruction of aphides, it was deemed advantageous to wait a few days for the separation of the compact clusters of blossom buds, in order that the spray stuff could be made to penetrate well among the clusters. Moreover, this decision was all the more justified by the desire to kill aphides, suckers, thrips, and caterpillars, so far as possible, in one spraying. With respect to suckers that does not mean much, partly because these pests are such adepts in protecting themselves low down between the stalks of leaves and blossom buds, and partly because not half of them are hatched when it is desirable to act against an early attack of the aphis. In regard to caterpillars, however, in memory of the catastrophe of last season, when they destroyed millions of blossom trusses, I am even more anxious to kill them than to destroy aphides. Where any considerable number of caterpillars are found, arsenate of lead will be added to the aphis wash, to poison their food. It would be better, no doubt, to use the two separately, because arsenate of lead is best applied in a very fine spray, while aphis-wash should be applied profusely and forcibly. But the two operations could not be got half through before the opening of the blossom, and after the fall of the petals it would be too late to prevent a possible repetition of last year's misfortune. Arrangements have been made for commencing operations upon the earliest blossoming Apples on April 2, following upon others as they become fit. It is gratifying to report that extremely few caterpillars have been found at present, but this is no security against their appearance in great numbers later on, as it is early for the eggs to hatch. In many cases a hundred trusses of blossom buds have been examined with a lens without finding one of these enemies. The worst case was that of four out of fifty clusters having been found to contain a caterpillar. Further, it is to be mentioned that the proportions of trusses containing aphides, so far as they can be found in the compact clusters of blossom buds, are very small as a rule, while twenty to fifty trusses of some varieties of Apples have been examined without finding any pest. Mr. Theobald informs me that the aphides found by me, some of which were sent to him, all belong to the species *A. sorbi*, otherwise known as the rosy aphis, a leaf curler, and the most common of the aphides in this country. Thrips (*Euthrips pyri*) have been found in greater number than any other pest. They attack blossoms and fruitlets, injuring many and killing some. The fullest account of this pest I have seen is in Mr. Theobald's *Report on Economic Zoology for 1909-10*, published by Headley Brothers, Ashford, Kent. Observation has proved to me that many thrips are killed when profuse spraying is carried out against the aphis. *Southern Grower.*

FIG. 67.—"NOTES FROM KEW": LYSICHITUM CAMTSCHATCENSE FLOWERING IN THE TEMPERATE HOUSE (see p. 145).

The Week's Work.

THE KITCHEN GARDEN.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

CARROTS.—Make a sowing of Carrots in ground that has been well prepared some months in advance. This root crop needs a light, warm soil, which has been well manured. Sow the seed in drills made one foot apart for varieties having medium-sized roots, and 15 inches for the larger-rooted sorts. By making successional sowings good crops of small roots will be always available. Heavy ground should be lightened by the addition of wood ash, road scrapings, old potting soil, and similar materials. Varieties previously recommended should be sown for early use, whilst Scarlet Intermediate is the best sort for general purposes.

HERBS.—Mint, Tarragon, Sage, Thyme, Sweet and Pot Marjoram, and Sweet and Bush Basil, are the most useful herbs. Mint and Tarragon may be propagated easily by division; the others are readily increased from seeds sown this month on a warm border in drills made one foot apart. Thin the seedlings to one foot apart for transplanting permanently later, or they may be replanted when large enough to handle early in June.

RUNNER BEANS.—In gardens where means exist, 200 or 300 small pots may be sown with Runner Beans. These pot plants may be put out towards the end of May with very little check to growth. Last year much of the seed of Scarlet Runners did not ripen, and old seed will of necessity have to be sown this year. It will, therefore, be advisable to sow rather more thickly than usual. Sowing in the open should be deferred for a few weeks.

CELERIAC. This delicious root vegetable is not so extensively grown as its merits deserve. Seed should be sown forthwith in boxes filled with fine soil and germinated in gentle warmth. The raising, hardening, and pricking out the seedlings should be done as in the case of Celery, but instead of planting them in trenches they should be planted on the level in deeply-dug and well-manured ground. Where the soil is light in texture, or in dry seasons, the plants will need watering.

GLOBE ARTICHOKES.—Deep cultivation of the soil is necessary to secure the best results with Globe Artichokes, and much depends on the variety. Purple and Green Globe vary considerably; a good form of the latter is probably the best sort, and it is extensively grown. New beds should be formed every fourth or fifth year. Detach some of the strongest suckers from the old stems with roots attached to the buried stems, and plant them in ground that has been deeply trenched and heavily manured, or a better plan is to place a number of suckers singly in 7-inch pots, grow them in gentle heat until they are well rooted, and plant them when they are suitably hardened at a distance of 3 feet apart each way. Subsequent culture consists in mulching the roots, keeping the plants clean of weeds, decaying foliage and rubbish, and watering occasionally in dry weather. Remove the protective litter from old plants, apply a good dressing of rotted manure, and lightly fork the dung into the soil. To secure large Artichokes remove some of the flower-heads on the side shoots.

PLANTS UNDER GLASS.

By E. HARRISS, Gardener to Lady WANTAGE, Lockinge Park, Berkshire.

CHRYSANTHEMUM.—Pot young Chrysanthemums as soon as they are ready for a shift, using a fairly substantial compost. A mixture of loam, leaf-mould, manure from a spent Mushroom-bed, wood ash, and coarse sand in proper proportions, is suitable for Chrysanthemums. For later potting a little bone meal or crushed bones may be added to the compost. All the plants may be shifted into cold frames, where with careful watering and ventilating, they will

do better than in warm houses. Recently potted plants should be kept in a close atmosphere for a day or two, and shaded from bright sun, but they should be accustomed to cooler conditions as soon as they have recovered from the check caused by disturbing the roots. Do not crowd the plants at any time, as this would favour the spread of rust disease. Spray the plants with an insecticide about once a fortnight.

CHIRONIA EXIFERA.—Chironia exifera is an exceedingly useful plant for decorative purposes during late summer and autumn, and is very easily cultivated. It may be propagated any time in the spring when cuttings are available. Insert the cuttings in pots or pans filled with a light sandy compost. Well water them in with tepid rain-water and place them under a handlight or a Cucumber or Melon house. When rooted transfer them to a light house having a medium temperature. Shift the cuttings into 3-inch pots when they have rooted well, using a compost consisting of loam, peat, leaf-mould and sand. Pots 5 inches in diameter are large enough for the final potting. Great care is necessary in affording water to the roots, for carelessness in this matter is often the cause of failure. Old plants may have their roots slightly reduced and be potted into receptacles one size larger than before.

BOUVARDIA.—If Bouvardias were treated as advised in a previous calendar plenty of young plants should now be ready for potting into 3½ inch pots filled with sandy soil. Grow the plants on in a house having a medium temperature. Pinch the young shoots two or three times during active growth to obtain dwarf, bushy specimens. As the weather becomes warmer Bouvardias should be gradually hardened off and placed in a cold frame. In view of the shortage of labour the plants should be planted out to ward the end of May, when danger of frost is past, on a well prepared border sheltered from rough winds.

THE ORCHID HOUSES.

By J. COLLIER, Gardener to Sir JEREMIAH COLMAN Bart., Gatton Park, Reigate.

DENDROBIUM.—Spring flowering Dendrobiums and particularly those of the Nobile section, are passing out of flower, and the necessary repotting or top dressing should be done as soon as roots develop from the bases of the young shoots. Ordinary flower pots form the most suitable receptacles, and the rooting medium should consist of a mixture of Osmunda fibre, or Al fibre, and fresh Sphagnum moss, cut into short portions, and a sprinkling of crushed crocks. The whole should be well incorporated together. Specimens that require repotting, after being taken from their pots, should have the compost shaken from the roots, and all useless pseudo bulbs removed, leaving only three or four behind each leading shoot. The pot should be just large enough to hold the plant comfortably, and filled to about one fourth its depth with clean crocks to ensure good drainage. Press the compost rather firmly, but not hard; when potted the base of the plant should be level with the rim of the pot. Tie the pseudo bulbs to strong, neat stakes to keep the plant secure in the pot. The surface of the soil may be covered with a layer of chopped Sphagnum moss at once, or later when the roots have grown freely, the latter being the better plan. After root disturbance water should be applied with extra care, or many of the new shoots will damp off. When the roots reach the edges of the pots the plants should be afforded liberal supplies of moisture until the new pseudo bulbs are fully developed. Newly potted plants should be shaded for a few hours during the middle of the day. Healthy specimens that have ample pot room, and with compost in a good condition, should have a little of the old materials removed from between the roots and replaced with new. All Dendrobiums of this section require a hot, moist atmosphere during their growing season, and are benefited by exposure to the early morning and late afternoon sun. During hot weather light sprayings overhead each afternoon will be beneficial. The old pseudo bulbs that have been removed may be propagated if an increase of the stock is desired, selecting those with dormant eyes that have not produced flowers. In preparing the pseudo bulbs for rooting, cut them to a single bud that has not flowered; make the cut close to the "eye" at the top end, leaving rather more of the stem at the bottom to insert in the compost. The cuttings may be placed in 4-inch pots half filled with drainage, putting a layer of Sphagnum moss over the crocks and fill to the rim with a mixture of finely chopped Sphagnum moss and coarse silver sand. Insert the cuttings in an upright position, and press them into the compost at a depth sufficient to hold them firm without covering the buds. They may be rooted in a warm propagating frame. Keep the materials on the dry side, and spray the young plants lightly on bright days. When the young shoots commence to develop roots shift them into small pots, using a similar compost to that advised for established plants.

THE FLOWER GARDEN.

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

PELARGONIUM.—Plants of bedding Pelargoniums may, in most districts, be transferred to cold frames or cold shelters. Provided the plants have not been cobbled they will withstand a comparatively low temperature with a little protection. In shelters the covering need not be removed day nor night for ten days or so. In frames, on the contrary, the plants should be kept covered in the daytime only when cold winds lower the temperature. No water should be given until the weather is more genial; the shading is to keep the plants moist enough to meet their requirements. Many other bedding plants may be grown on in cold frames but not the very tender ones.

BIENNIALS.—Canterbury Bells and Sweet Williams are frequently not sown till it is too late to obtain good sized flowering plants, at least in the north. It is better to sow some time in this month, early or late, according to the locality. The plants will not develop so fast, but on the whole they will be much superior in every way. It is doubtful whether the old-fashioned method of sowing thinly broadcast is not to be preferred to sowing in drills in which the seedlings are apt to become drawn and weakened through not having attention when it is wanted, owing to pressure of other work.

DAHLIAS.—Old Dahlia roots may be divided as soon as sufficient growth has been made to enable this to be done, and planted at once, the buds to be 4 inches below the surface when planting is completed. The shoots will not appear above the ground until danger from frost is past, and the young shoots are considerably hardier than the growths of Potatos, which, it may be noted, are treated in much the same manner as advised for Dahlias. It is to their advantage, too, to be flowered earlier and are more floriferous than those produced from cuttings, and, of course, the labour expended on them is much less. Young plants should now, or shortly, be turned into cold frames and carefully watered for a time. Treated thus they will be more stocky than those grown on in a glasshouse or cold pit.

THE HARDY FRUIT GARDEN.

By JAS. HUDSON, Head Gardener at Gunnersbury House, Acton, W.

HARDY FRUITING VINES.—The present month is the best time to prepare the border and to plant hardy Vines. An impression seems to exist that Grapes cannot be grown successfully out of doors in even the most favoured parts of this country. The site is all important as the keystone to success. Vines should be planted in a warm southern aspect, or one that tends to the west rather than to the east. No elaborate system of wiring or training need be adopted: all that is wanted are a few galvanised studs to secure the Vines for the time being, others being added as growth progresses. Give care and attention to the preparation of the border, as this is essential to obtain a good start. The border need not be of great extent for the first season or two. Three good barrowfuls of compost should be ample for every Vine that is planted. Take out the present soil to a depth of 2½ feet, make up the lower 6 inches with brickbats or old mortar rubble, putting some of the finer portions on the top. Then fill up firmly with the soil to within 6 inches of the top. On this proceed to plant the Vines after having carefully shaken the roots free of the soil and disentangled them. It is advisable to remove all the old soil by soaking the ball in water, after which it will be an easier matter to separate the roots. Spread the roots carefully and evenly in the upper 6 inches of the border, and fill up with first some of the finer portions of the mixture, and then with the ordinary compost. Make the soil firm, firing, and water it once or twice shortly after planting to settle it around the roots. As the Vines will probably not have been pruned, it will be safer to leave them as they are for the present. Eye-shoots should be disbudded later. Too many shoots should not be retained in the first year; two bold shoots and three or four laterals will be sufficient. The compost should be chiefly composed of the best yellow turfy loam obtainable. One-sixth of the three barrowfuls might be of well decomposed manure, and some sifted lime rubble should be added when on the dry side. The compost should be well mixed; it not very dry turn it once or twice more. A few varieties of Grape only are recommended for out-door cultivation. Of these Black Cluster, a hardy variety with blue black berries; Reine Olga, one that has frequently been shown, tawny red when ripe, and of Muscat flavour; Cambridge Botanic Garden, a black variety that ripens its berries early; and Sweet Water, usually called Dutch Sweetwater, also an early variety, with pale green berries and a thin skin.

FRUITS UNDER GLASS.

By W. J. GRIGG, Gardener to Mrs. DEMPSTER, Keele Hall, Newcastle, Staffordshire.

POT VINES. When pot Vines are swelling their berries the roots require plenty of stimulants, both in liquid form and as top dressings. Weak liquid manure in a tepid state is an excellent stimulant for pot Vines; at the same time a change of fertiliser is advisable, and the liquid manure may be varied by soot water, guano, or a "concentrated fertiliser." When the Grapes are well past the stoning period the Vines may be forced a little more, but not by the use of extra fire heat at night, when the temperature should be kept below 70°, with a little air. It will be brought about by closing the house early in the afternoons and thus raising the temperature by sun heat, with plenty of atmospheric moisture. Ventilate the vinery with caution, admitting fresh air gradually, and never so as to cause a cold draught. Pinching the shoots should not be carried to extremes if the roots have penetrated the bed, and, as every leaf assists the fruit, good lateral growths should be tied out to secure an even balance of foliage over the trellis.

UNHEATED FRUIT HOUSES.—Orchard house trees in pots that are still out of doors should be placed under glass at once. They may be introduced into any unheated structures which will afford protection from late frosts. The house should be fully ventilated during the day, also at night when the weather is mild, to retard the flowering season as much as possible. Fumigate the trees before the flowers open, as usually dormant aphides are present on the buds, and directly the insects feel the effects of a little more warmth they become active and spread quickly over the trees.

MELONS.—If space is available for successional crops of Melons a good supply of young plants should be provided. Fill a large box with fermenting materials and place it in a warm pit. Sow a few seeds singly in small pots once a fortnight, and plunge the pots up to their rims in the hot bed material. Place the box near the roof glass to ensure the seedlings making sturdy growth. Early plants are well advanced, and as they are trained to the trellis will gain in strength daily. Remove all male blossoms up to the time the female blossoms are ready for fertilising. At this period the amount of moisture in the atmosphere and at the roots should be slightly decreased, but not unduly. When the fruits commence to swell more water may be given, and liquid manure may be used occasionally until the fruits have reached their full size. The night temperature should not fall below 70°, with a rise of 10° to 15° during the day. Increase the amount of ventilation gradually as the sun gains power.

EDITORIAL NOTICE.

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

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

Special Notice to Correspondents.—*The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.*

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

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.*

APPOINTMENT FOR THE ENSUING WEEK.

TUESDAY, APRIL 9—
Roy. Hort. Soc. Coms. meet.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 46.0.

ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, *Thursday, April 4*, 10 a.m.: Bar. 29.7, temp., 50.5°. Weather Dull.

Grow more Potatos.

Gardeners who will take thought and ask themselves by what counter offensive they may seek to make good the ground recently won by the enemy will find the answer at the head of this article. The considerable area of ground which has been occupied by the Germans has involved a by no means negligible loss of foodstuffs both actual and potential. For it is evident that much of the ground over which the fighting has taken and is taking place was under cultivation, and might have yielded food for large numbers of men. To help to make these losses good every man who has land capable of being used for food production should resolve forthwith to place yet another piece of it under food crops, and above all under Potatos. Little more than a square yard of garden ground will, if put under this crop, yield enough food to supply—as measured in food units—the total requirements of one man for one day. It is not enough for gardeners to aim, as hereto fore, to produce supplies sufficient for the household. Every gardener ought to aim, and to aim most strenuously, to produce a surplus, so as to make a contribution toward the feeding of the urban population.

On the present rationing basis, the articles of food which are not yet rationed have to be utilised to supply some 1,100 calories out of the daily total of 3,500 required by an active and hard-working man. Of these articles, it may be possible to obtain sufficient fish and milk to make up about 500 of the 1,100 calories; but even so, there remain about 900 of the necessary calories which must be supplied by vegetables. Hence gardeners will have to produce considerably more vegetables even for household requirements, for to obtain the 900 calories just referred to a person will have to eat upwards of 2 lbs. of vegetables per day. This would seem at first sight a formidable task, but it has to be remembered that the Potato may be eaten in many different ways, and there is no doubt but that every household will have to use this article of diet much more freely than in the past. Therefore, cooks ought to be instructed—if they have not already learned—how to diversify the forms in which Potatos may be presented at table—at breakfast in the form of scones as well as at dinner in the form of "plain boiled."

Allowing 2 lbs. of Potatos per head, we arrive at the very considerable figure of 6½ cwt. per head per year, and therefore, the number in the household being known, the total requirements in Potatos are known. Allowing 10 tons to the acre as being a good garden yield—and it would be safer to allow 8 tons—we arrive at the conclusion that to supply sufficient Potatos to supplement the rations an area of from 5 to 6½ rods per person must be cultivated for household use alone; this without allowance for chats and diseased tubers, and without providing for a surplus for distribution among those who have no ground to cultivate. There is still time to bring fresh ground under cultivation, and there never was a time in our history when there was a clearer call to patriotic duty than that which summons every able-bodied man and woman to spend all the time they can spare or make to provide in the first place for their own needs, and in the second place to produce a surplus. No thinking man can doubt that our armies holding off the assaults of the enemy food will win the war. But not everyone realises so well as the gardener how much may be done in the way of home production of food. Therefore we appeal to every one of the fraternity who reads these lines to redouble his own efforts to increase the area of ground which he is cultivating and to make himself a missionary to promote by example and by precept the work of growing more food.

Facts are stubborn things, but ignorance is more stubborn. The facts of the situation are that, just as a motor-car requires a known amount of petrol to run a given distance at a certain rate, so a man requires a known amount of food to do the day's work. If he has not that amount, the work cannot be done. Of the food which man requires none can be produced more readily than the Potato; hence the appeal by the Prime Minister to grow more Potatos. An extra million tons is wanted. Most gardeners are already doing all that is possible; but there are still some who are living in a fool's paradise and pursuing the meticulous customs of peace-time gardening. To them especially we would appeal, and ask them to put aside all the unnecessary things of the garden and devote their whole energies to food production.

SALE OF BATSFORD PARK ESTATE.—It is reported that Lord REDESDALE is effecting a sale of a large portion of his property, amounting in all to about twenty thousand acres, and including the beautiful estate of Batsford, Moreton-in-Marsh. The late Lord REDESDALE, who died on August 17, 1916, was an enthusiastic horticulturist. Batsford was entirely his own creation. The mansion was constructed of stone obtained from a quarry on the estate, and the garden and grounds, including the celebrated wild garden and rock gardens, were created out of the green-pastured valleys and picturesque hills which formed the estate at the time of purchase. Bamboos are the chief feature of the gardens, but there is also a fine collection of trees and shrubs obtained from every part of the world.

FOOD EXHIBITION AT LEICESTER.—An exhibition to encourage Food Production, Food Economy, and the Preservation of Fruits and Vegetables has been held in the Museum, Leicester, during the past fortnight. The Ministry of Food was represented by two cookery experts, and the Food Production Department of the Board of Agriculture by Mr. V. BANKS, who staged a contribution of bottled and dried fruits and vegetables. Mr. LOWE, the curator of the Museum, showed specimens illustrating food values and the articles at present available as substitutes in place of those foods more generally used before the war. The Royal Horticultural Society filled a space of about 48 feet by 15 feet, illustrating garden tools, models of flat-digging, trenching, and Potato-planting, Haricot Beans grown at Wisley, models of vegetables, garden seeds, manures and fungicides, spraying machines, cases of models of insect pests, a collection of the newer Potatos, and homely methods of testing seed germination. They had also a model of a cellar or room fitted for the storing of roots and fruits, and a model of a cropped allotment. Three lectures on Food Production were given by Mr. CHAS. H. CURTIS.

MR. LEONARD SUTTON.—The sympathy of our readers will go out to Mr. LEONARD SUTTON, Deputy Mayor of Reading, and member of the firm of Messrs. SUTTON AND SONS, in the bereavement he has sustained in the death of his son, Lieutenant E. M. SUTTON, R.E., who was killed in action during the recent battles in France. Of his five sons who have joined H.M. forces, four have laid down their lives for their country.

APPOINTMENT.—Viscount GOSCHEN has been appointed Joint Parliamentary Secretary to the Board of Agriculture in succession to the Duke of MARLBOROUGH, resigned. He will represent the Department in the House of Lords. Lord GOSCHEN is the son of the first Lord GOSCHEN, Chancellor of the Exchequer from 1887 to 1892.

HOME-GROWN TIMBER.—The Board of Trade has issued a new Order as to maximum prices for home-grown timber, replacing the Order dated December 4, 1917. The principal changes made are in the prices for converted softwoods, but provision is also made for the certification of port or city sawmills by the Controller of Timber Supplies, to whom early application for the necessary forms should be made to obtain the benefits of the Order. All persons interested in home-grown timber should obtain a copy of the Order, which will shortly be on sale through the Stationery Office.

LEITH HILL, SURREY.—Wholesale destruction of the timber on Abinger Common, Leith Hill, is threatened, and an attempt is being made to secure its preservation. At the annual parish meeting held at Abinger on Saturday, the following resolution was proposed by Lord FARRER, seconded by Lady LUGARD, and carried unanimously:—"That this meeting of Abinger parish desires to call the attention of the Board of Agriculture to the proposed forcible felling of all timber on Abinger Common, Leith Hill, by the Timber Supply Department of the Board of Trade without consent of the owners or com-

meters, and expresses the hope that the Department will be able to save this spot of special interest and beauty from destruction."

PROTECTIVE POWER OF SNOW.—A correspondent, writing to *Symons's Meteorological Magazine*, says:—"The following observation shows the remarkable extent to which a covering of snow protects the ground and plant life from intense cold. About 6 p.m. on January 13 a minimum thermometer was placed on the ground in the centre of my lawn here, the temperature then being only a few degrees below freezing. Snow then fell to the depth of 1½ inch. At 11 p.m. the snow had ceased falling and it was a bright starlight night, and very cold. A second minimum thermometer was then placed on the top of the snow. No more snow fell in the night. In the morning, the two thermometers recorded the following minimum temperatures:—On the top of the snow, 2° below zero; under the snow, 24°, or a difference of 26°.

SUNFLOWER SEED.—It has been brought to the notice of the Food Production Department that growers are unable to obtain supplies of American Giant Sunflower seed at the prices mentioned in the notice recently issued by this Department, viz. 5d. per oz., 9d. per 2 ozs., or 1s. 5d. per 3 ozs. A considerable quantity of the sunflower seed has recently been released at a price which enables retail seedsmen to sell at these rates. The Department will be glad to supply retail seedsmen with the names of the wholesale firms from whom they can obtain supplies of this seed. The seeds of the Giant strain of Sunflower are much liked by cage birds and poultry.

THE GENUS EUCALYPTUS.—Eucalyptus *robusta* is the most widely diffused of all the Australian Eucalypts, being spread nearly all over the Australian continent, and occurring in all the States except Tasmania. In the XXXIII. and last part issued of his *Critical Revision* of the genus Mr. MAIDEN devotes ten pages of letterpress and three plates to the elucidation of this, which, after all considering its wide range, shows comparatively little variation, and has only two obscure synonyms. Its specific name is due to Sir JOSEPH BANKS, and, on the authority of R. H. CAMBAGE, "It is a common tree on the banks of many of the rivers and large creeks of North Queensland. It is often associated with Casuarina Cunninghamiana, and while usually of stable to ascend some distance, and descend much further down the streams, and this attribute or quality has enabled it to cross the continent from north to south and from east to west." Growing under the most favourable conditions Eucalyptus *robusta* is a handsome tree, 100 feet or more in height, with narrow, slender leaves sometimes nearly a foot in length, and small flowers with bearded lobes, followed by small "about 4 cubic inches in capacity." This Gum Tree is most widely known as the Pool Gum, though in some other districts bear this name in different distributed E. tereticornis.

VARIETIES OF BARLEY.—Mr. H. V. HARLAN's descriptive analysis* of one hundred and fifty-two varieties is useful to English students, for the only other original source of information, BEAVEN's *Botany of Barley*, being out of print, is not always accessible to them. The scheme of classification adopted by the author takes as its basis that cultivated varieties of the genus Hordeum are of one of four species, namely H. vulgare, intermedium, deficiens, and distichon, the two former including the six-rowed varieties, distichon the two-rowed forms, and deficiens the defectively two-rowed. H. vulgare is distinguished from intermedium by the fact that the lemmas of the florets are awned or hooded, whereas those of intermedium varieties are neither arched nor hooded. The author recognises 32 varieties, and diagnoses them by several characters in a key to varieties, and this is followed by a key to the numerous subvarieties. The bulletin concludes with a useful note on the identification of threshed material.

* *The Identification of Varieties of Barley.* By Harry V. Harlan. U.S. Dept. of Agric., Bull. No. 622.

PLANT NOTES.

JEFFERSONIA.

THE genus Jeffersonia is a member of the Berberidaceæ, and consists of only two species, one from North America, the other from Manchuria. They are both small, tufted perennials producing their flowers early in the spring before the leaves develope. Both are woodland plants and require a moist, shady position in rich light soil.

J. BINATA. J. DIPHYLLA.—Hab. North America.

ON INCREASED FOOD PRODUCTION.

CHINESE CABBAGE.

IN reply to Dr Durham (p. 91), I may state that my experience with this vegetable is recorded on p. 58. Whether the plants are Pe-tsai or Pak Choi I do not know; but he has a few seeds of the latter to spare I will grow the plants together this season, and state the results later. In the meantime, I have sent Dr Durham a little of the seed I grow as Celery Cabbage named by the Kew authorities last season, from their very rich foliage, as Shantung or Chinese Cabbage. I hope he will grow and determine for himself. Messrs. Ryder's state that the plant matures in eight weeks, and if sown in spring runs to seed. My experience was that the plant did not run to seed until after heads had been formed. I am curious to know how autumn-sown plants would act in spring, and hope to try again next autumn. I have made two trial sowings this month in West Surrey, both sowings are looking promising, notwithstanding that we are experiencing drought and sharp frosts. It has been suggested that this vegetable may prove a good field crop for cattle or sheep. *J. C.*

THE SOY BEAN.

In connection with the note by Mr. Lynch, on the Soy Bean, in the issue for January 26, 1918, p. 38, I should like to call your attention to an article in the *Botanical Journal* for March, p. 81, giving an account of experiments I have conducted during the past four years with a yellow-seeded variety of this Bean. In one particular the article is in error, it gives the number of

FIG. 160.—BUTTERS SAY TO BEE, "COLOUR OF FLOWERS RICH."

varieties known in China as four, distinguishing them by the colour of the seeds. As a matter of fact, there are many hundreds of varieties grown. The U.S.A. Department of Agriculture, at its experimental farm at Arlington, Virginia, last year held a trial of nearly 500 distinct varieties, which they had collected. I sent them seeds of my variety to test with theirs, in the hope of identifying it. They reported that it was an unnamed variety, probably from the vicinity of Harbin, a very prolific sort, not a pure strain, but one from which better yielding sorts might be obtained by selection.

I was successful in inoculating my plants grown at the Botanic Gardens last year with a culture of the Soya bacteria, received from America, and they bore a number of nodules on their roots This does away with any difficulty in future, since American experience shows that, to transfer the bacteria, it is only necessary to dust the seed, when sowing, with soil in which inoculated plants have been grown.

Mr. Lynch has sent me a few of his black Soya seeds to try, and as in his letter he states that he has grown this Bean at Cambridge for eight years, he is certainly entitled to the credit of first success in its acclimatisation. *J. L. North, Curator, Royal Botanic Society, Regent's Park.*

JERUSALEM ARTICHOKES

THE attention of allotment holders, gardeners, and small cultivators generally is drawn by the Food Production Department to the value of the Artichoke both for purposes of human food and for feeding to pigs.

Recent investigations by the Royal Society Food (War) Committee show that the Artichoke eaten in moderation is an excellent human food and that its food value as measured in calories is superior to that of the Potato. The composition of Artichokes and of Potatos is as follows:—

	Water.	Proteins.	Carbo hydrates.	Total Calories per lb.
Artichokes	79.5	2.6	16.7	365
Potatos	75.5	1.8	14.7	310

The Artichoke, moreover, gives large crops. An average yield from field cultivation is about 10 to 12 tons, but in gardens and allotments it should be considerably higher. Estimates of yield obtained by the Royal Society Food (War) Committee gives figures so high as 20 tons per acre on garden ground. Other advantages possessed by the Jerusalem Artichoke are that it is not subject to disease and will grow in almost any soil and situation provided there is an abundance of light and air. It succeeds best on a deep, friable, sandy soil. For planting, medium-sized tubers should be chosen or larger tubers may be cut into pieces, each with two or three eyes. The white tubered varieties are generally preferred to the pink as they are of a better shape. In the south, planting should be done during March or the beginning of April, but in late districts and in the North planting may be continued until the end of April. The tubers may be planted in shallow trenches or dibbled 4 to 5 inches deep, in soil which has been previously well worked. The usual distances at which to plant are 3 feet between the rows and 1 to 1½ foot between the sets. The planting should be closer in poor soils and wider in rich soils; 14 lbs. of tubers will plant a rod of ground. The only cultivation necessary is hoeing to keep down the weeds and the drawing of a little earth to the stem. The surface of the soil should be stirred during dry weather. Artichokes when fed to small pigs should be cooked, but sows will eat them raw. Under field cultivation and after the crop has been lifted pigs turned into the field will clean the ground by picking up the small tubers left in digging, and a further advantage of thus turning in pigs will be the increased fertility of the ground

HOME CORRESPONDENCE.

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

EARLY-FLOWERING SHRUBS (see pp. 112, 130, 141).—In these gardens also Prunus Pissartii has been finer in flower this season than I have noticed it anywhere before. The tree usually flowers well with us, but this year it has surpassed itself. The typical P. cerasifera (the Myrobalan) from which P. Pissartii is derived has been equally fine, deserving the high praise bestowed on it by Mr. Wm. Robinson, "the showiest of all the Plums," an opinion that has always puzzled me. What is the reason of this exceptional flowering? Other flowering shrubs have started the season well, and most flowered freely last year. I associate the early and free flowering with hard, dry winters, another example of that much-debated mystery, "frost and the plants' awakening." *Harold Evans, Llanishen, Cardiff.*

FEEDING PIGS FROM SMALL GARDENS.—It is, indeed, hard lines for the useful pig, if special foods are so scarce as indicated by Mr. Molyneux on p. 141. I had no intention to say that the various foods I mentioned could be obtained from a 10-rod plot. I merely set myself to enumerate the various foods that a pig would eat and thrive upon, leaving readers to determine what is available in their respective districts. Small gardens in many country districts are by no means limited to 10 rods. I know from many correspondents during the past winter and previous ones that they have large gardens and plots of ground running up to half an acre or more. Some years ago I was talking to a clergyman in Berkshire, discussing the amount of produce he could get from his garden if he trenched a portion of it every year. He admitted the truth of my statements, but said that the amount of produce would far exceed his requirements. This would apply to many villa gardens, a large portion of which is laid out in lawns that give rise to a great deal of hard labour and return nothing. Ground that cannot be cultivated by the plough, being between streams, corners of fields, etc., are to be found in various parts of the country, and often lying waste. Such land would provide a large amount of produce for the household, pigs, and poultry. A fair quantity of Clover, Vetches, and Lucerne may often be obtained on waste ground on country farms and estates on which families may be located. In my younger days we cut sufficient green fodder on the banks of streams, ditch sides, and waste places on the farm to keep a cow and a horse from the time they were housed at night till put out on the pastures in the morning. I merely mention these things to show that there is often great waste of good green fodder than can be cut with the scythe and used for various domestic animals. *J. F.*

— I must take exception to the statement by *J. F.* on p. 116 that the "bottom of the small wooden house"—the sleeping compartment I take it being alone intended—"should be boarded to prevent the animals grubbing up the floor." For a like purpose countless numbers of pigs have been tortured by having their snout pierced by a ring or its equivalent, the object of both being equally fallacious and wrong. Pigs that exhibit unmistakable activity in rooting up the floor of the sty also demonstrate that they are improperly and insufficiently supplied with food. The remedy, therefore, is obvious. A pig that is given substantial meals sufficiently often and with regularity will invariably lie down afterwards. The animal that is always grubbing about is not fattening at the same time. In my youthful days my father kept pigs, and I had to take my share in looking after the animals. In only one instance was the floor of any sleeping compartment boarded, and that only partly so. Floor disturbance was, however, unknown, the pigs being fed well and regularly. From the time they were six weeks or so old, Barley meal scalded with the always cooked food was given, the whole being of gruel consistency. A frequent error made by cottagers in pig keeping is that of giving raw food. He will tell you he prefers that the pig shall first "make a frame," and he will fatten it afterwards. He succeeds without doubt in respect to the "frame"; it could hardly be otherwise on two scant uncooked meals a day. In respect to cooked food for pigs I am at one with your correspondent. The way our pigs throve upon it left no room for doubt. In addition we made it a practice to wash all root crops—Potatos, Parsnips, Beet, Artichokes, etc.—before cooking them, so that a clean, wholesome, and fattening food was the result. Barley meal scalded with the vegetables named forms an ideal food for pigs. To this end Jerusalem Artichokes might be grown on hitherto uncultivated ground. This crop requires but little attention beyond the planting, and the plant succeeds almost in any soil or situation. In summer our sties were washed down daily. Doubtless there are reasons to be urged against the keeping of pigs by cottagers and others in populous districts, though in view of existing circumstances it is time urban and other authorities relaxed their Eye laws, and, with a certain reservation as to cleanliness, made pig-keeping possible to the cottagers at home. It is doubtful if pigs can be kept on allotments, which are often far from the home, and cottagers handicapped for time in a variety of ways could never feed the animals properly. *E. H. Jenkins.*

HIPPEASTRUM RETICULATUM (see pp 126, 141).—The late Mr. B. S. Williams raised several choice hybrids of Hippeastrum reticulatum in the eighties, including those named Mrs. J. B. Pitcher, Mrs. Garfield, and Mrs. W. Lee. These varieties were all much finer in form and substance than the type, and the colours much deeper. All the flowers were distinctly reticulated, and the foliage had the line of white along the mid-rib. I am afraid they are now extinct in this country, but I believe they are still grown in the United States, as large numbers of the plants were sent to that country. *Hortus.*

JERUSALEM ARTICHOKE (see p. 140).—Your eminent correspondent, the Hon. Vicary Gibbs, declines to accept the general explanation of the word Jerusalem as a corruption of the Italian word "girasole." There is a possibility of defining existing words too literally, so that names may be mistaken for what they are intended to be: for example, Stilton, Cambridge, etc., are applied to certain foods not produced at those places; also plant names, such as English Iris, French and African Marigolds, Artichaut d'Espagne, and Artachaut de Jérusalem are both names of Custard Marrow (Patisson). So we have to accept their local and current meaning. M. Gibault, the gold medallist historian of vegetables, has in his work, *Histoire de Légumes*, a long article on the "Topinambour" from its introduction in the 17th century, and there states that the English name is a corruption of girasole. The popular French name, "Topinambour," is derived from a tribe of Brazilians called Tupinambas, who were amusing Paris at the time of its introduction. Your correspondent also states that "girasole" has never been used by Italians, but this is not correct, as a reference to a work on international names of plants, *Catalogo poliglotto delle piante*, compilato dalla Contessa di San Georgio, Firenze, 1870, gives girasol tuberoso as an Italian name, as well as Tartufo di Canna and Tartufo bianco. According to Heresbach, 1508, ex Johnston, the word Artichoke is a corruption of Alticocalum, compounded of the Arabic Al and cocalos, a Pine apple. Alcachofa is the Spanish name. The word Artichaulx is given with instructions for planting in a translation of Varro by Antoine Pierre, Poitiers, 1543. It may be a very difficult matter to give the Jerusalem Artichoke a new English name that would take on, as so many translations of meaningless descriptions have been given, such as Pear, Apple, Potato, Truffle, and may get relegated to old books, as has been the case with Love Apple. Miller, in 1748, described under Corona Solis this small flowering tuberous species as a native of Canada called Jerusalem Artichoke. It very rarely flowers north of Paris; the tubers are not used as food much in France, but they are much esteemed for cattle. Consequently the production of new varieties from seed is not resorted to, although there are a few distinct varieties, round, smooth, and irregularly long, purple and white skinned; also a pear-shaped variety, all of which seem to be reproduced constant in shape when well cultivated, but beyond the colour of the skin no particular notice is taken of them. Some time ago when the tubers of Helianthus decapetalus

were put on the market as a rival to the H. tuberosus, it received the name of "Helianthi," which seemed very appropriate. I would suggest that Helianto (es for plural) as a short name for Jerusalem Artichoke, as the word would retain the association of the generic and popular names. It is rather remarkable that so few of the Compositæ produce edible roots excepting Chicory, Salsafy, and Scorzonera. Sometimes Dahlias produce big clusters of tubers, but I have never heard of their use as food.—*J. Mac*.

SOCIETIES.

ROYAL HORTICULTURAL.

Scientific Committee.

MARCH 26.—*Present*: Messrs. E. A. Bowles, M.A. (in the chair), W. C. Worsdell, J. W. Odell, W. Hales, and F. J. Chittenden (hon. secretary).

Plants from Salonika.—Mr. Bowles showed flowering specimens of a white form of Romulea Bulbocodium, with buff shade exteriors to the outer perianth pieces, and Ornithogalum divergens, both raised from bulbs sent from Salonika.

Seed from W. Indies.—Mr. Worsdell said he had compared a seed brought by Mr. Hales to the last meeting with specimens in the Kew Herbarium, and found it to belong to the genus Dioclea. The plants of this genus are widely spread through the tropics, and the seed floats long in the sea, being frequently washed up upon the shores of tropical seas.

Persistent fungus.—Mr. Worsdell also said that the fungus shown at the last meeting from Mr. Wilks was Russula nigricans. Every year this fungus growing in Mr. Wilks' wood at Shirley dried up and turned black in autumn, and persisted in this condition for a long time.

Polymorphous acorns.—Mr. Hales showed an acorn, one of many similar ones, in which three complete embryos had developed and given rise to three plants on germination. Others of the same batch of seeds from Sussex produced two and a few one plant.

Potato Scab.—Some specimens of the common Potato scab were shown. This disease, which is only skin deep, and does not appear to affect the weight of crop adversely, is due to the attack of a bacterium called Actinomyces chromogenus (formerly known as Oospora scabies). It is spread by infection from old tubers for the most part, and this may be obviated in a great measure by steeping the affected tubers before they are planted for sprouting in a solution of one part of formalin to two hundred of water.

MARCH 26.—The usual fortnightly meeting was held at the London Scottish Drill Hall, on the 26th ult. The exhibition was only small, but Orchids were shown fairly numerously, and the Orchid Committee recommended two awards to novelties and four medals to collections.

The Floral Committee awarded two Awards of Merit to novelties and nine medals to collections. Besides the handsome Rhododendron Ernest Gill and Primula Jewel, an interesting spike of Clivia (Imantophyllum) hybrida superba was shown by F. Berry, Esq., Hardwicke Grange, Shrewsbury. The flowers, borne on a large head, are of pale citron colour, which is deeper tone in the centre. This variety is said to have originated in Basutoland. Messrs. R. Gill and Sons, Falmouth, again set up a handsome collection of Rhododendrons, of which the richly-coloured Shilsonii, Cornubia, Thompsonii, and Thompsonii grandiflora were particularly noticeable. Mr. Reuthe, Keston, also exhibited Rhododendrons and various Alpines. Mr. L. R. Russell, Richmond, again showed Wistarias, Prunus triloba, and Pyrus japonica in variety. Messrs. J. Piper and Sons exhibit included the fragrant Viburnum Carlesii. Messrs. Geo. Bunyard and Co. showed Forsythia viridis, Corylus spicata, Magnolia stellata, and other flowering shrubs. Hardy flowers were shown by Mr. G. W. Miller, Wisbech, and Messrs. R. Tucker and Sons, Oxford. Messrs. Allwood Bros. contributed their usual fine exhibit of Perpetual-flowering Carnations, whilst Ferns, Cinerarias, Primula obconica, and Genista fragrans were shown by Messrs. H. B. May and Sons, Edmonton.

Floral Committee.

Present: Mr. H. B. May (in the chair), Messrs. W. G. Baker, W. B. Cranfield, John Green, W. J. Bean, John Head, Geo. Harrow, Wm. Howe, Charles Dixon, Chas. E. Pearson, H. J. Jones, John Dickson, W. P. Thomson, E. H. Jenkins, J. F. McLeod, C. R. Fielder, J. Jennings, E. A. Bowles, and R. C. Notcutt.

Awards of Merit.

Rhododendron Ernest Gill.—This magnificent variety is a cross between R. Lucombei and R. Fortunei. The truss is bold and compact, and the individual flowers are unusually large and of a bright rose-cerise colour. The variety may be described as a rose-cerise Pink Pearl. Shown by Messrs. R. Gill and Sons.

Primula Jubilee Jewel.—A cross between P. Juliæ and the garden variety "Hull's Blue" of P. vulgaris. The habit of the new variety is superior to that of P. Juliæ, whilst the flowers are considerably larger and of better form. The colour is lilac-magenta, and the flower has a gold centre. Shown by Mr. R. D. Webster, Newland, Newton Abbot.

Groups.

The following awards were made to collections:—*Silver Flora Medal* to Messrs. Allwood Bros.; *Silver Banksian Medals* to Messrs. R. Gill and Sons; Messrs. H. B. May and Sons, and Mr. G. W. Miller. *Bronze Flora Medals* to Messrs. Geo. Bunyard and Co., and Messrs. R. Tucker and Sons. *Bronze Banksian Medals* to Messrs. J. Piper and Sons; Mr. G. Reuthe, and Mr. L. R. Russell.

Orchid Committee.

Present: Sir Jeremiah Colman, Bart. (in the chair), Sir Harry J. Veitch, Messrs. Jas. O'Brien (hon. secretary), W. Bolton, W. H. White, E. Brooman White, R. G. Thwaites, Purnell Bath, F. Sander, H. G. Alexander, E. H. Davidson, Frederick J. Hanbury, Walter Cobbett, J. Lucas, and E. A. Bowles.

Awards of Merit.

Dendrobium Alphonse Khanenia × *crassicaule* (*Bigamum*).—From Sir Jeremiah Colman, Bart., Gatton Park, Surrey, gr. Mr. Gilbert. A very pretty flower of fine size and great impressive effect. Dr. Rolfe not only preserving its attractive characteristics. The increase in size is interesting from the fact that D. crassinode, emdocharis × nobile) is much smaller than the other species used. The flowers of the variety are coloured rosy-lilac, the lip having a white base slightly tinged with yellow.

Brasso-Cattleya Doris Langley-variety "*Lord Rothschild*" × *B. C. Madame Ch. Maron*.—From Messrs. Flory and Black, Slough. This hybrid first flowered at the seedling stage in 1915. The large flowers on the mature plant now shown were of a bright rosy mauve colour with yellow disc to the lip, which has purple lines at the base and on the front lobe.

Groups.

Messrs. Armstrong and Brown, Orchidhurst, Tunbridge Wells, were awarded a Silver Flora Medal for a group of new and rare hybrids. Odontioda Arlet Odm. Crawshawiana × Odontioda Cooksoniæ) is a pretty novelty, with vinous red flowers, having slight white markings and rose-coloured lip, the yellow crest of which bears evidence of the O. Hallii in O. Crawshawiana. Choice new varieties included Odontoglossum eximium Orchidhurst variety (eximium × illustrissimum), with a fine spike of fifteen light violet-blotched flowers, and Odontioda Royal Gem, Orchidhurst variety (Odm. ardentissimum × Odt. Vuylstekeæ), with reddish-claret flowers quite different to varieties previously shown. Among species were noted the rare Odontoglossum nævium, and a small plant of the charming white Cattleya Schroderæ Hercules.

Messrs. Charlesworth and Co., Haywards Heath, were awarded a Silver Flora Medal for a group of well-grown Odontoglossums and Odontiodas, and cut spikes of Eulophiella Peetersiana and Neomoorea irrorata.

Messrs. Sanders, St. Albans, were awarded a Silver Banksian Medal for a group of hybrid Cattleyas and other Orchids. The new Laelio-Cattleya Dulce var. Sanderæ (C. Mendelii × L. anceps alba), with white flowers having a yellow disc to the lip, and a pretty light rose-coloured form of L.-C. Jay Sander were the most notable plants.

Messrs. Stuart Low and Co., Bayfordbury, Sussex, were awarded a Silver Banksian Medal for a varied group containing several showy Sophronitis crosses, including Sophro-Laelio-Cattleya Hon. Barbara Wilson (C. Fabia × S.-L. heatonensis), a variety of vivid rose colour with darker veining and mauve-purple lip, and S.-C. Ateens (C. Lawrenceana × S. grandiflora).

Sir Jeremiah Colman, Bart., showed Odontoglossum illustrissimum var. purpureum, the dark-spotted flowers having white margins and tips; also an interesting collection of cut Dendrobium flowers taken principally from plants raised at Gatton Park, and showing extraordinary variation in colour.

Dr. Michel Lacroze, Roehampton, showed the new Odontoglossum San Luis (eximium × Excmouthii), a variety of good size and rich colouring.

Pantia Ralli, Esq., Ashtead Park, Surrey (Orchid grower Mr. W. H. White), exhibited Brasso-Cattleya Digbyano-Schroderæ "Brad shawiæ" (B. Digbyana × C. Schroderæ alba). The large white flowers have a broad, finely fringed lip. The plant was specially interesting in being part of the original specimen for which an Award of Merit was given on April 5, 1904.

J. Ansaldo, Esq., Rosebank, Mumbles, sent Laelio-Cattleya J. Ansaldo (Haroldiana × aurea-cordata). It is a salmon-tinted flower, with ruby-purple front to the lip.

Messrs. Flory and Black showed their new Brasso-Cattleya Rosita (B. C. Hera × C. Dowiana), an attractive and distinct hybrid, with well-formed cream-white flowers of fine substance, with marginal flush and spotting of purple, the lip bearing dark claret-red markings.

Narcissus and Tulip Committee.

Present: Mr. E. A. Bowles (in the chair), Messrs. J. T. Bennett-Poe, Wm. Poupart, F. Herbert Chapman, Peter B. Barr, Francis Barnard, W. B. Cranfield, and Miss E. Willmott.

No award was made by this Committee.

A few novelties, including some promising Trumpet Daffodils, were placed before the Committee by Messrs. F. Herbert Chapman, Esq., Rev. M. C. B. Jardine, Wandsworth Common, showed a few vases of Daffodils, including the pretties Dutch Companion, Harlem, Hamlet, Lucifer, Scafell, and Sparkler.

Fruit and Vegetable Committee.

Present: Messrs. Jos. Cheal (in the chair), Wm. Poupart, H. S. Rivers, Edwin Beckett, A. Bullock, A. R. Allan, F. Jordan, W. H. Divers, E. A. Bunyard, John Harrison, George F. Bray, Owen Thomas, and Rev. W. Wilks.

Dr. H. Wayne (gr. Mr. E. Griffin), Buckhold, Pangbourne, exhibited 50 fishes of excellent Apples. All were typical fruits of good size and colour, and very firm flesh. The Society was asked to sell the fruit and hand the proceeds to the Red Cross Fund. The principal sorts were Cox's Orange Pippin, Blenheim Pippin, King of the Pippins, Anne Elizabeth, and Hanwell Souring. (Silver-gilt Banksian Medal.)

Messrs. J. Cheal and Sons, Crawley, showed splendid fruits of Crawley Beauty and Lane's Prince Albert, with smaller collections of Lord Derby, Beauty of Kent, Annie Elizabeth, and other Apples. (Silver Knightian Medal.)

Obituary.

J. Harrison Dick.—We regret to announce that we have received from New York the news of the death, from appendicitis, of Mr. J. Harrison Dick, Editor of *The Florists' Exchange*, of that city. It will be remembered that prior to his taking over his American appointment Mr. Dick was Editor of the *Journal of Horticulture* and earlier, assistant editor of the *Gardening World*. Before taking up a journalistic career Mr. Dick served for some time in his native country of Scotland as a gardener. He married a daughter of the late Mr. A. J. Bruce, of Chorlton-cum-hardy, who specialised in hardy insectivorous and other plants. Mr. Dick published several works on horticultural subjects, including *Commercial Carnation Culture*, *Sweet Peas for Profit*, and a yearly publication, the *Gardeners' and Florists' Annual*.

CROPS AND STOCK ON THE HOME FARM.

POTATOS.

IN districts favourable to early planting the main crop of Potatos should be planted forthwith. A thorough preparation of the soil is essential for Potatos, and an extra ploughing always repays when the soil is in a suitable condition for working, as it pulverises the clods and destroys weeds. The use of the cultivator afterwards aids further in providing a good tilth, which is all important. The question of manure is one for local circumstances. Farmyard manure is best ploughed in in the autumn, but in many localities it is put in the drills at the time of planting.

Banking the rows is favoured in many parts, while planting on the flat is practised in districts where the annual rainfall is low. Abundant space is an advantage both between the rows and between the tubers: a distance of from 2 feet 6 inches to 3 feet is advisable for tall, robust-growing sorts, and the tubers of such sorts should be set at least 15 inches apart in the rows. Dwarf varieties will succeed at a closer distance.

STORE CATTLE.

Heifers and steers are in demand to furnish the milk and meat supplies and they should be grown on vigorously into full size rather than an at tempt be made to fatten the steers prematurely. In the former condition they are much more serviceable than they can be as fat beasts. Two year-old heifers that were kept in the straw yard since November with the view of making manure and consuming rough hay or hay entirely on good Oat straw, Cabbage, and Mangold, should be given a change of food, such as grass in the open, still continuing the daily supply of Mangold. Eighteen Shorthorn heifers that have been treated here in the way advised promise to grow into useful milch cows by October, the bull having been turned out with them early in January. Heifers calving about October should be very valuable, as milk at that time is never too plentiful. With an abundant supply of rough grass which was saved for the ewes prior to lambing, and which they did not require, other food being plentiful, the heifers will quickly improve in appearance by the changing of their coats. Provide plenty of water and continue the Mangold ration of, say, four or six roots to each animal daily.

TREATMENT OF COWS BEFORE CALVING.

In some districts cows are more liable to suffer from milk fever than in others, owing mainly to the wet nature of the ground and the soft condition of the grass produced. Another cause of milk fever in cows is their being in too fleshy a condition at the period when they are approaching parturition. Milk fever may mean a serious loss, especially now that cows are such an enormous price—£50 is a common sum realised for a good animal of reputed milk production. Fortunately, milk fever is not nearly so common as formerly owing to the improved methods of treating the animals at critical periods, and also to prompt measures of treatment of the illness by the injection of a serum into the udder directly the cow is affected. Within six weeks of parturition the cow should be carefully dried off from previous milking. The animal will be benefited by that period of rest, although it is difficult to achieve this with some animals of a heavy milking capacity. In such bona cases the cows should be carefully fed on good Hay and straw, with water at all times available, in an open yard with shed accommodation so that the animals can get abundant exercise. When cows are thus treated, keeping them away from grass, milk fever is almost unknown, and the cows produce larger and more healthy calves than where they are kept more in the house and deprived of exercise.

I need hardly say the animals should not be allowed to get too low in condition, as the calves as well as the mothers will suffer. They should be given a small quantity of concentrated food—say, 2 lbs. of Linseed cake per day. *E. Molyneux, Swanmore Park Farm, Bishop's Waltham, Hampshire.*

MARKETS.

COVENT GARDEN, April :

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

	s. d.	s. d.
All 48's, per doz.		
Aralias	7 0– 8 0	
Araucaria excelsa	7 0– 8 0	
Asparagus plumosus	10 0–12 0	
— Sprengeri ...	9 0–10 0	
Aspidistra, green ...	36 0–42 0	
Boronia megastigma ...	18 0–24 0	
Cyclamens	21 0–24 0	
Cinerarias	10 0–12 0	
Erica persoluta ...	36 0–42 0	
— Wilmoreana ...	30 0–36 0	
Genistas	18 0–24 0	
Marguerites, white ...	9 0–10 0	
Mignonette	12 0–15 0	

REMARKS. There will be very little business done in pot plants before the end of this week.

Ferns and Palms: Average Wholesale Prices.

	s. d.	s. d.
Adiantum cuneatum, 48's, per doz.	9 0–10 0	
— elegans ...	9 0–10 0	
Asplenium, 48's, per doz.	9 0–12 0	
— 32's	21 0–24 0	
— nidus, 48's ...	10 0–12 0	
Cyrtomium, 48's ...	8 0–10 0	
Nephrolepis, in variety, 48's ...	12 0–18 0	
— 32's	24 0–36 0	
Pteris, in variety, 48's	8 0–12 0	
— large 60's ...	4 0– 5 0	
— small 60's ...	3 0– 3 6	
— 72's, per tray of 15's	2 0– 6	

Cut Flowers, &c.: Average Wholesale Prices.

	s. d.	s. d.
Anemone fulgens per doz. bun...	4 0– 6 0	
Arums—		
— (Richardias), per doz. blms.	6 0– 8 0	
Azalea, white, per doz. bunches ..	4 0– 5 0	
Camellias, white, per. doz. ...	2 6– 3 0	
Carnations, per doz. — blooms, best American var.	2 0– 4 0	
Croton leaves, per bun. ...	1 3– 1 6	
Daffodils (single), per doz. bun — Barrii	2 0– 3 0	
— Emperor ...	4 0– 6 0	
— Golden Spur ...	3 0– 4 0	
— Princeps ...	2 0– 3 0	
— Sir Watkin ...	3 0– 4 0	
— Victoria ...	3 0– 5 0	
Eucharis, per doz. blooms ...	3 0– 4 0	
Freesia per doz bun.	0 6– 1 0	
Gardenias, per box (12 s.) ...	6 0– 8 0	
— (18 s.) ...	9 0–12 0	
Heather, white, per doz. bun...	9 0–12 0	
Lilium longiflorum, long ...	6 0– 7 0	
— — rubrum, per doz long ...	4 0– 6 0	
Lilium, con. — — short, per doz blooms ...	2 0– 3 0	
Lily-of-the-Valley, per doz. bun ...	3 0– 5 0	
Narcissus, omatus, per doz. bun.	1 0– 1 0	
Orchids, per doz.:— — Cattleyas ...	12 0–18 0	
— Cypripediums	4 0– 6 0	
Pelargoniums, double scarlet, per doz. bunches ...	12 0–18 0	
Roses, per doz blooms— — Fran Karl Druschki ...	3 0– 5 0	
— Gen. Jacqueminot ...	3 0– 4 0	
— Joseph Lowe ...	5 0– 8 0	
— Lady Hillingdon	4 0– 6 0	
— Ladylove ...	6 0–10 0	
— Liberty ...	4 0– 8 0	
— Mme. Abel Chatenay ...	6 0– 8 0	
— Niphetos ...	3 0– 4 0	
— Richmond ...	4 0– 6 0	
— Sunburst ...	6 0–12 0	
Tulips, per doz. blooms — Darwin, various	3 0– 4 0	
— Single, white ...	2 6– 4 0	
— — Yellow ...	2 6– 3 0	
— — Pink ...	2 6– 3 0	
— — Red ...	3 0– 4 0	
— Double, red ...	3 6– 5 0	
— — yellow ...	4 0– 4 6	
Violets, per doz. bun.	4 0– 5 0	

French Flowers: Average Wholesale Prices.

	s. d.	s. d.
Anemones, double pink, per doz. bun. ...	2 6– 3 0	
— single, mixed ...	5 0– 6 0	
Mimosa (Acacia), per basket ...	5 0– 7 0	
Ranunculus, carnation, per doz. bun. ...	4 0– 8 0	
Ranunculus, con — — scarlet ...	15 0–18 0	
Stocks, white, per pad	9 0–12 0	
Violets, Parma, per bun.	4 0– 5 0	
— Star Allium, per pad ...	8 0–10 0	

Cut Foliage, &c: Average Wholesale Prices.

	s. d.	s. d.
Adiantum (Maiden hair Fern) best, per doz. bun ...	10 0–12 0	
Asparagus plumosus, long trails, per half-dozen ...	2 6– 3 0	
— — medium, doz. bunches	18 0–21 0	
— Sprengeri ...	10 0–15 0	
Berberis, per doz. bun.	6 0– 8 0	
Carnation foliage, doz. bunches...	4 0– 5 0	
Cycas leaves, per doz.	3 0– 6 0	
Ivy leaves, per doz. bunches ...	2 0– 2 6	
Moss, gross bun...	7 0– 8 0	
Smilax, per bun. of 6 trails ...	2 0– 2 6	

REMARKS. Cut flowers are coming in good demand throughout the week, and everything had practically cleared out on Tuesday and Wednesday, on Saturday nothing. The cold weather kept the supplies from being too heavy, and there were the usual illuminations in private during the week and Easter. Until 2 only small consignments arrived from the Channel Islands, which were soon cleared. The heaviest arrivals from the Channel Islands on Friday and Saturday, the consignments being well up to the usual size. The majority of these flowers will be useless and unsaleable when delivered.

Fruit: Average Wholesale Prices.

	s. d.	s. d.
Almonds, per cwt	170 0	
Apples :— — English, per bus.	30 0–45 0	
— Russets, French, measure of about 60 to 70 lbs. ...	45 0–50 0	
Dates, per box ...	1 7– 1 8	
Grapes :— — Almeria, per barrel (3½ doz. lbs.)	55 0–70 0	
Grapes, con — — Gros Colman, per lb ...	8 0–12 0	
— Black Hamburgh, per lb...	6 0 —	
Lemons, per case...	40 0– 45 0	
Nuts, Barcelona, per bag ...	150 0 —	
Oranges, per case	100 0–1 0 0	
Strawberries, forced per lb. ...	10 0–21 0	
Walnuts, kiln dried, per cwt. ...	100 0–110 0	

Vegetables: Average Wholesale Prices

	s. d.	s. d.
Artichoke, Chinese (Stachy) per lb.	1 3– 1 6	
— Jerusalem, per ½ bushel ...	2 6– 3 0	
Asparagus (English), per bundle ...	8 0–10 0	
— Lauris	3 0–10 0	
— National, per bundle	12 0–14 0	
— (Paris Green), per bundle ...	7 0– 8 0	
Beans :— — Broad, per pad	6 0– 7 0	
— French (Channel Islands), per lb.	1 9– 2 0	
Beetroot, per cwt.	5 0– 6 0	
Carrots, new, per doz. bunches ...	4 0– 6 0	
— per bag	4 0– 5 0	
Cauliflowers per doz	1 0– 2 0	
Celeriac, per doz....	7 0– 8 0	
Celery, per bundle	2 6– 4 0	
Chicory, per lb. ...	0 8– 1 0	
Cucumbers, per doz.	9 0–12 0	
Endive, per doz ...	4 0– 5 0	
Garlic, per lb. ...	0 8 —	
Greens, per bag ...	3 0– 4 0	
Herbs, per doz bun.	2 0– 4 0	
Horseradish, per bun.	3 0– 4 0	
Leeks, per doz. bun.	4 0– 4 6	
Lettuce, Cabbage, per doz. ...	2 6– 4 0	
Mint, forced, per doz. bun	4 0– 6 0	
Mushrooms, per lb ...		0– 4 0
Mustard and Cress, per doz. punnets	1 0 —	
Onions, French, per cwt. ...	24 0–26 0	
— spring, per doz. bun. ...	1 0– 1 0	
— Valencia, per case (4 tiers) ...	30 0–31 0	
— — (5 tiers) ...	30 0–34 0	
Parsley, per strike...	2 6– 3 0	
Parsnips, per bag...	0– 6 0	
Peas, per lb. ...	1 0– 5 0	
Potatos, new, per lb	0 10– 1 0	
Radishes, per doz. bunches ...	2 0– 3 0	
Rhubarb, forced per doz.	1 0– 1 9	
— natural, per doz.	3 0– 4 0	
Savoys, per tally ...	8 0–12 0	
Seakale, per punnet	1 2– 3 0	
Shallots, per lb.	0 3– 1 0	
Spinach, per bus. ..	4 0– 5 0	
Swedes, per bag ...	2 0– 3 0	
Tomatos, per lb ...	0 6 —	
Turnips, per bag ...	4 0– 5 0	
— new, per barrel	6 —	
Turnip-tops, per bag (72 lbs.) ...	2 0– 3 0	
Vegetable Marrows, per doz. ...	10 0–15 0	
Watercress per doz.	0 5– 0 10	

REMARKS. Supplies of Apples are now very limited. The new season's Black Hamburgh Grapes have made their appearance this week, and a few bunches of Gros Colman are still obtainable. There are fair supplies of Spanish Almeria Grapes. Forced Strawberries are on offer in limited quantities. A few English Pineapples (Queens) reached the market this week, and met with a ready sale. The following forced vegetables are on offer :—Asparagus (English and French), Cucumbers, Seakale, Mushrooms, Marrows, Beans, Tomatos, Peas, New Potatos, Broad Beans, Mint, Radishes, and English and French salads. *E. H. E., Covent Garden Market, April 5, 1916.*

GARDENING APPOINTMENTS.

MR J. S. COATES, late Foreman at Wynyard Park Gardens, Stockton-on-Tees, and formerly at Mointon Paddocks and Elvaston Castle, as Gardener to Captain GRANVILLE FARQUHAR, Esq., Dalton Holme, Beverley, East Yorkshire.

MR. W. FELSTEAD, Superintendent of Public Parks, Wolverhampton, as Superintendent of Parks and Allotments to the City of Norwich.

ANSWERS TO CORRESPONDENTS.

CORRECTION.—In the note on Cymbidium, Cymbidium, on line 6, column 3, should read Cymbidiums.

DECORATING NEWLY MADE GRAVE. *Hortus.*—There are various ways of fixing evergreens and flowers to the walls of a grave. Where the soil is of a clayey consistency they are easy to pin to the sides and ends of the grave. With friable soil it is impossible to fasten them securely by this means, and wire netting nailed to frames is necessary. A mesh up to 4 inches across may be used, according to the material available. A space of 4 inches at the sides and ends, both of soil and brickwork, is required for the smooth lowering of the coffin when the "decorations" are fixed in this manner. With regard to payment for such work, the rates would vary according to the locality.

NAMES OF PLANTS: *Barberis.* 1, Miltonia cuneata; 2, Deutzia gracilis; 3, Berberis Thunbergii.

RIGHTS OF TENANTS: *C. J. W.* An amateur grower, as distinct from a nurseryman, has no right to remove any trees, shrubs or plants from the soil, although they may have been planted by him as tenant; however this rule might possibly be held not to apply to such plants as it is customary to take up for "potting" purposes. The landlord would have the right to claim compensation for any growing things which were wilfully damaged, although not removed. Stones, forming a rockery, which merely rest on the ground by their own weight, may be removed.

WHITE FLIES ON BRASSICAS: *W. L.* The flies are known as Snow Flies, or Aleyrodes proletella. They are very common on Brassicas. Spray the plants frequently with soft soap and Quassia extract.

Communications Received.—H. E. J.—S. R.—E. C.—J. P.—C. T.—A. P.—S. A. W.—S. W.—S. A. C., Ltd.—F. W. C.—W. H. C.

THE
Gardeners' Chronicle
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CONTENTS.

ILLUSTRATIONS.

ON INCREASED FOOD PRODUCTION.

INDOOR TOMATOS

TOMATO seed should be sown in shallow pans or pots filled with fine compost. Cover the seeds with fine soil, and water the seed pans with a fine rose can. Place a sheet of glass over the seed pan and cover the glass with paper so the seeds germinate best in the dark or in a close atmosphere. As soon as the seedlings appear remove the coverings and place the pan on a shelf close to the roof glass to keep the plants stand. When the third leaf appears prick the seedlings into small pots singly and grow them in the same temperature as they were raised in. When the pots are filled with roots shift the plants into 5 inch pots, using a slightly rougher compost consisting of two parts fibrous loam to one part leaf mould, and one part manure from a spent Mushroom bed with a good dealing of soot. Grow the plants in a house having a temperature of 60°. Select the lightest position possible close to the roof glass.

There are two methods of growing Tomatos in pots and planted out on beds of soil. The latter method entails much less labour in watering. Whichever method is adopted the compost to be used will be much the same. Tomatos should never be grown in too rich soil, as this causes them to make gross growth which will not fruit freely. Use only good turfy loam from an old pasture chopped up roughly, one part leaf soil, one part old hot-bed manure, and a 6-inch potful of bone meal to a barrow load of soil makes a good compost. If possible, prepare it a little in advance of the potting time. If pots are used, those of 9-inch diameter are the most suitable. These must be carefully crock them, and place some turf grass side downwards, over the crocks to ensure efficient drainage. Pot the plants firmly, and leave about 3 inches of space to permit of a top dressing when the plants are beginning to set their fruit. Any kind of house suits the Tomatos, provided they are placed close to the glass, where they can get plenty of sun and air. The latter is most important as Tomatos will not thrive in a close, stuffy house. If possible wires should be stretched along about one foot from the roof and 10 inches apart, and the plants trained up these, allowing room for the foliage to develop. A little air should be admitted through the front ventilators, and the wires tapped every morning to distribute the pollen. After the first two trusses of fruit are set, and the pots are full of roots, the plants should be fed with diluted liquid manure, and given a little concentrated fertiliser at intervals. If too many fruits set in a truss the smaller or misshaped ones may be picked off. When the plants reach the top wire they should be stopped. If the foliage is very thick the ends of the branches may be taken off at the discretion of the grower to admit all the light possible to the fruit. The plants must not be over watered at this stage, but when necessary give a thorough soaking on two occasions, otherwise the fruits will crack. If the planting out system is preferred, place two 9-inch boards side by side on the stage and one edgeways each side of these, and fastened to the bottom boards. Allow a space of one inch between the bottom boards for the water to drain away. Over the top place some pieces of slate or pot-sherd, then a thin layer of small crocks, and some turf over all. Then fill nearly to the top of the boards with the soil, making all very firm. Turn the plants carefully out of the 5-inch pots and plant them with a trowel about 12 feet or 15 inches apart according to the variety. Certain varieties grow much stronger than others, and should of course be given a little more space. A light mulch of manure is helpful in conserving the soil moisture, but by no means, both for Tomatos grown in pots and in beds. The plants in pots to receive their more frequent feeding, fruits to be fastened to these placed out, for the reason that the soil in the latter is sooner exhausted. Feeding, however, should not be done to excess, or the plants would make rank foliage and little fruit. As soon as the fruits turn colour they should be gathered. *H. W. Thatcher, Garden, Port Lympne, Hythe, Kent.*

BRASSICAS

THE above produces a long succession of green vegetables over much of the year. They all require ample room to develop, and I recommend that in the early stages of growth and are all liable to the club root, or "finger and toe" disease. This destructive pest attacks most, if not all, Cruciferous crops, and is difficult to eradicate. The fungus is capable of infecting the soil, and where the disease has appeared the ground should not be cropped with Cruciferæ for several years.

Lime and lime does not occur in plants grown on "mineral" soils and much may be done locally in its ravages by dressing affected land with freshly slaked lime. The lime should be applied in the autumn, at the rate of 1 cwt. per rod. Seed of the autumn section of Broccoli may be sown outside at the present time. In the north we choose a warm position and a rather early date, as advantage results from getting the plants well established in pots passed through a sieve with a rough mesh. The same remarks may be followed with the winter and spring Broccoli sowing, the seed the first and third week in April respectively. Immediately the seedlings are ready for transplanting they should be done. It is important that they should not become drawn in the seed bed. Allow the young plants a space of 4 to 6 inches each way, and plant them in light soil. At the beginning of July those of the autumn section will be ready for transferring to their permanent quarters. Deep cultivation is advocated for Brassicas, having repeatedly seen its superiority demonstrated. The ground should be of good quality, but the comfort of fresh organic matter is to be avoided. It is better to plant in March or after than to use the watering pot, but if this is really necessary, water the ground thoroughly before and after planting. Broccoli should be planted in rows 2 feet apart, and 2 feet from plant to plant. The winter and spring kinds are ready for planting out in the manner described in the second and third week in June respectively. A trinity of good varieties for succession is **Veitch's Self-protecting**, Snow's Winter White, and Leamington. The cultivation of Brussels Sprouts in its main features is the same as suggested for Broccoli. It differs in that the seed should be sown under glass in March in a temperature of [illegible]. The seedlings should be pricked out [illegible] gradually hardened off, and transferred to their position in May. A distance of [illegible] necessary for the plant's development. Where it is desired, and the ground can be spared, a successional crop may be obtained by sowing under handlights as advised for Broccoli. The importance of a firm rooting medium for Brussels Sprouts would be difficult to exaggerate. The best variety I have grown of recent years is Bedfordshire. The plant forms "buttons" from the bottom to the top of the stem, and the Sprouts rarely burst. Savoys may be sown in a warm position in the light soil in April. The seedlings may be transplanted as suggested for Broccoli. They will be ready for the final transplanting in June and require a space of 15 inches each way. The variety Tom Thumb is of excellent quality. Cabbages may be had in spring, summer, and autumn. The experience of Mr Edwin Beckett with the variety Harbinger, see p. 104, seems to hold out hope that in certain conditions we may have Cabbage for winter use. Varieties of the summer section are sown under glass in February, those for autumn cropping in a warm position out of doors the first week in April, and those for spring use in the open garden in July. *Geo. H. Copley, Harewood Park, Bradford, Yorkshire.*

LEEKS

Your correspondent *G. H. H.* (p. 136) looks like Mr Thatcher's method (p. 104) entails more labour than is necessary for growing exhibition Leeks. I have never read a more complete and accurate method of growing good Leeks than that of Mr Thatcher. It is so simple, clear, and easily understood that a novice could not go wrong by following out his instructions. One ounce of seed sown under the conditions Mr Thatcher advocates would give better results than four ounces sown in the open ground. More than that, the work is being done really in mid-winter. The advantage of early planted Leeks is too well known to those who practise this method to be lightly set aside. One specimen grown under Mr Thatcher's method would be worth a dozen under *G. H. H.*'s directions, so where is the saving of labour? To grow Leeks, especially in holes 6 or 7 inches deep, is utter folly. In planting Leeks for market neither method is practised to this locality (Mid and East Lothian), where at least 400 acres are grown, mostly for the Glasgow market. Leeks are, in fact, one of the market growers staple crops, more care and attention being devoted to them than almost any other. Of late years one method has been to sow large areas thinly in drills about the end of March or beginning of April, and by giving them some top dressing occasionally have them ready for pulling by the middle of August. There is no blanching, but by inducing a quick, healthy growth the market is supplied with a good sample which can be disposed of at a very moderate price. This method has been the means of placing the vegetable on the market at a price our forefathers would never have dreamt of. Some growers who have less accommodation sow seeds thinly in boxes in February or in frames heated by manure, and after hardening the seedlings plant them out in the end of April in rows made 12 or 14 inches apart and 4 to 5 inches between the plants. The August sowings are made about the middle of March and the seedlings transplanted after Early Milan Turnips and McEwan Cabbage are cleared from the ground during June, July and the first week of August. To plant any later is only wasting time and material. The best results so far as size and quality are concerned are obtained from planting made in June and the first two weeks of July. As to the depth of planting, only as much as is necessary is put into the soil as allow the plant to be kept in its place by a gentle tap of the dibber. For a girl to plant 15,000 in a day there is not

much [illegible] to make holes 6 or 9 inches deep. Part of the tops of the leaves are cut off and as much of the root as to leave only about one quarter [illegible] in such so that the plants can be handled quickly. It requires more hands dressing and tending the Leeks to the planters than it does to plant them. These plants are put in only one at 5 inches or at most 4 inches apart in the rows, and 160,000 plants are required for an acre. With all the outcry as to the shortness of the supply of food, the Leek grower at present is very hard hit. The market price, or the price that the grower has to accept at present is [illegible] at most 1½d., for a bunch of twelve Leeks. Growers here were asked to grow vegetables for the Army and Navy, and having done so have been expecting that at last they would have easily got rid of them at a [illegible] price, but very few Leeks have been sold to either the Navy or Army, and I think market gardeners should know the reason why. Not a single Onion have been sold at a very [illegible] *Times* Mr. *Scarlett, Inverness, Mar* [illegible]

LEEKS SOWN OUT OF DOORS.

[illegible] to Mr. Thatcher on p. 104, no [illegible] to open air seed sowing, only [illegible] greenhouse and cold frame methods. The Leek is so hardy a plant that to supply [illegible] sowing [illegible] Leeks sown [illegible] Forget-me-nots to our minds be [illegible] used for raising under glass, but [illegible] Leek seed can be sown out of doors [illegible] results satisfactory for general use. [illegible] be sown in August and September in drills, like winter Onions, and left to stand where sown until the spring, future treatment then being as usual. My first digging of Leeks this season was from plants so grown. *C. Turner.*

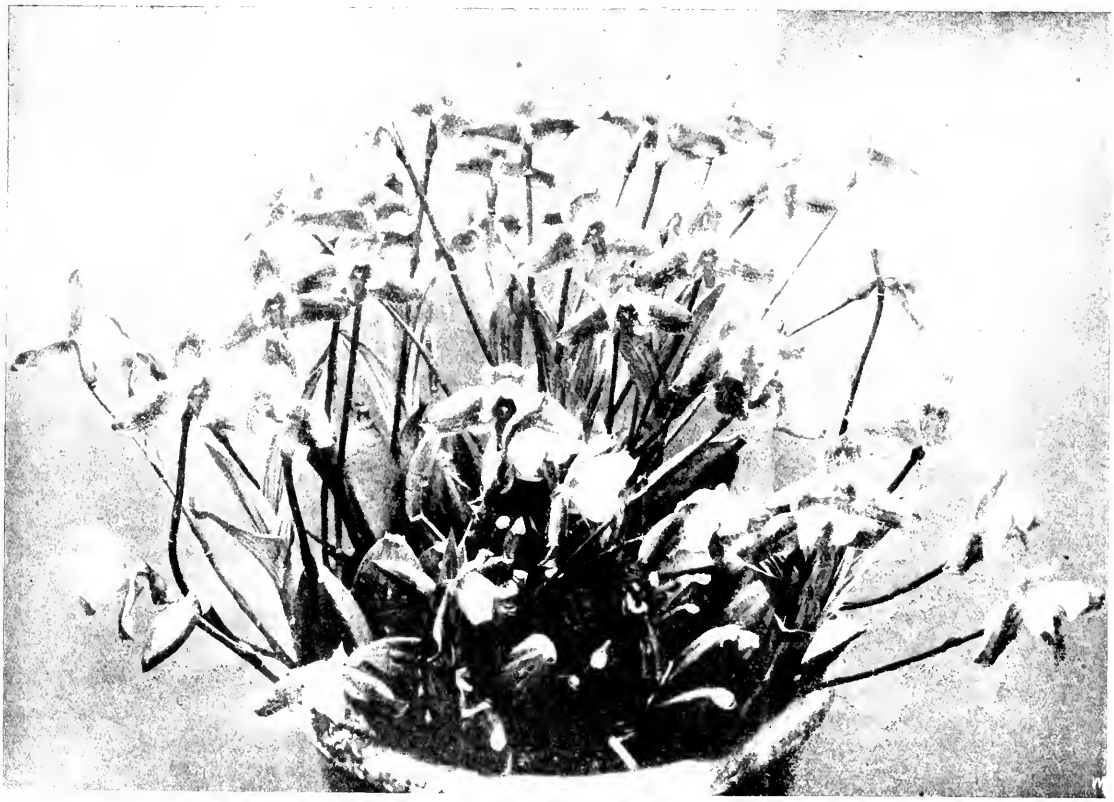
THE CARNEGIE DUNFERMLINE TRUST AND ALLOTMENT HOLDERS.

The trustees of the Carnegie Dunfermline Trust have arranged to distribute 15 tons of seed Potatos among their allotment holders and offer £90 in prizes for vegetable cultivation.

NOTICES OF BOOKS.

"The Peaches of New York."*

The arrival of the valuable fruit monographs from the Geneva Experiment Station is something of an event in these days when pressive of these is the vast body of legend and folklore which has the Peach for its subject in that country. The very interesting discoveries of Mr. Meyer, who is searching China for cultivated varieties of fruit and vegetables, also give some ground for upholding a Chinese origin. Travellers in Turkestan and Western Central Asia, such as Schuyler and Lansdell, speak of the marvellous growth of the Peach there, and its possible origin in this region and Eastward migration cannot be dismissed as unlikely. In any event the knowledge of this fruit goes back to very remote times, probably the earliest mention being that in the "Shi King," compiled by Confucius, and as Mr Hedrick does not mention this, it may be of interest to quote the following passage: "The Peach tree is



[Photograph by C. P. Raffill.

Fig. 69.—Lycaste deppei. Flowers greenish yellow blotched with brown. (See p. 156.)

[illegible] so little systematic pomological work is being done in this country. The high standard set by the previous volumes on Plums, Cherries, and Grapes is well maintained in the latest book on Peaches, and as the lines on which it is laid out follow its predecessors, and are doubtless well known to all students of fruit, they need not be recapitulated here. The history of the Peach, like so many of our fruits, still remains in its earliest periods a matter for investigation. At first considered a native of Persia, its original home is now pushed farther back to Central Asia, and even to China itself. Several facts lend support to a Chinese origin, and not the least important of these is the vast body of legend and folklore which has the Peach for its subject in that country. The very interesting discoveries of Mr. Meyer, who is searching China for cultivated varieties of fruit and vegetables, also give some ground for upholding a Chinese origin. Travellers in Turkestan and Western Central Asia, such as Schuyler and Lansdell, speak of the marvellous growth of the Peach there, and its possible origin in this region and Eastward migration cannot be dismissed as unlikely. In any event the knowledge of this fruit goes back to very remote times, probably the earliest mention being that in the "Shi King," compiled by Confucius, and as Mr Hedrick does not mention this, it may be of interest to quote the following passage: "The Peach tree is elegant and young, brilliant are its flowers, abundant will be its fruit. There are Peach trees in the garden; the fruit may be used as food." Mr. Hedrick, quoting De Candolle, names Theophrastus as the first to mention the Peach, but the Swiss author was mistaken in this matter, as he would have seen if he had read on and noted that the "Persian Apple" was placed among clothes to keep the moth away, an office for which the fragrous Peach is [illegible] formed. The fruit was, of course, the Citron. The origin of the Peach from the Almond, which was favoured by Thomas Andrew Knight, and later by Lindley and Darwin, is discussed and the author decides against this theory. It is interesting to note that the Almond has not been found wild in China according to Bretschneider, nor does a Chinese word exist for it.

* *The Peaches of New York.* By U. P. Hedrick, (state of New York Department of Agriculture, Albany. J. B. Lyon Company.)

the identification of Loniero being a mistake. We may, perhaps, picture a common parent like the philological "Aryans," whose nakedness science now clothes with inverted commas. These, however, are matters for the student, the gardener will be more anxious to know if the vast collection of varieties now gathered together in America, at Geneva and elsewhere, offer anything of interest or novelty. The answer is decidedly in the affirmative. Recent exploration in Chinese and Russian Turkestan has revealed that the variability of the Peach in European gardens does not disclose all its possibilities. From Tsinan, Shantung, comes a variety which will keep until February if wrapped in tissue paper, and it attains one pound in weight. A variety with white stones is also mentioned. The behaviour of these new types in America will be followed with great interest. The history of the introduction of the Peach into America is treated at length, and makes a very interesting chapter in the history of plant adaptation, but we must pass on to the main part of the book, namely, the descriptions of varieties, and refer the reader only to the very interesting chapters on culture, diseases, and to the instructive map of the distribution of Peach orchards in the State of New York. A slight feeling of disappointment will be felt by the British reader in that only two of the varieties originating in this country are in the main list of those described and figured. We looked forward to some valuable work on the tangled nomenclature of some of our old varieties such as Royal George, but alas! they do not prove acceptable in New York, and are thus relegated to the second list of varieties which receive more summary treatment. A study of the coloured plates, which are quite the best Mr. Hedrick has given us, show the varieties we know well, such as Waterloo, Alexander and Hale's Early, very much smaller than we are accustomed to see them, but reflection reminds us that our fan-trained trees are very restricted and probably more highly fed than the open standards which the climate of Geneva permits. There are doubtless many good varieties to come from America to our gardens, and when we realise how much we owe to that country for extending the Peach season, we only regret that we cannot pay back our debt in kind. In looking through the names of varieties described it is interesting to note in the "Early Red Melocoton" a survival of the old Greek word which passed from Italy to Spain, and perhaps with the Jesuits to America. We also note that the "rule" which prevails in European Peaches that a serrate leaf is glandless does not hold in the American varieties, both globose and reniform glands being associated with this character.

The bibliography given is very full and useful, but we notice a curious omission, that of "Die Amerikanische Frühpfirsiche" of Dr. Stoll, the only monograph published in Europe on American Peaches.

Many of the questions raised by a study of this work must be reserved till later, and it remains to felicitate Mr. Hedrick and his able assistants, Messrs. Howe, Taylor, and Tubergen, on a contribution to pomological literature which will, we imagine, for long retain its place as the standard work on American Peaches.

BULB GARDEN.

LILIUM BROWNII.

I READ with much interest the note by Mr. Grove on "Lilies in 1917" in the issue of *Gardeners' Chronicle*, March 16. The introduction of this Lily is obscure, and notwithstanding all the recent writings of Messrs. Wilson and Henry we seem to be no nearer to discovering its original home. On the contrary, the frequent mention by collectors of "Lilium Brownii" has only tended to confusion, as the form usually referred to is Lilium japonicum colchesterense (or, as I think it should be properly designated, Lilium odorum).

Mr. Grove mentions that would-be growers, knowing no better, rely upon bulbs imported from Japan. He also states that L. Brownii is cultivated in nursery gardens in that country. For the last forty years I have seen and handled produce from most Japanese Lily importations, but never once have I come across a bulb of the true Lilium Brownii in any importation from Japan or China. Nor have I ever heard of its being grown in Japan.

I believe, however, that Lilium odorum has frequently been disposed of by dealers (who ought to know better) as Lilium Brownii, and this possibly accounts for Mr. Grove's statement. Twenty-five years ago it was plentiful and large quantities used to come from Holland and Belgium. The light peaty soil of Belgium produces bulbs of splendid quality, sometimes measuring from 10 inches to 12 inches in circumference. Of late years, stocks have so dwindled that this Lily has become almost unobtainable. It [illegible] struck me as being quick [illegible] of Mr. Grove's [illegible]

[illegible] China [illegible] Lilium odorum [illegible] seeds.

The [illegible] United States. [illegible] purchased some of those large bulbs in Victoria, B.C., [illegible] but they did not [illegible] *Robt. W. Wallace.*

ORCHID NOTES AND GLEANINGS.

LYCASTES.

THE genus Lycaste has not too many admirers. If L. Skinneri were less retractory it would be immensely popular; if we could all grow it as successfully as the late Mr. O. O. Wrigley grew it at Bridge Hall, Bury, for example. He mastered its requirements as few have done, and the groups of beautifully grown, well-flowered specimens of pretty well all the varieties known that he used to exhibit at Manchester made many Orchid growers feel small. It is to be regretted that the collection of Orchids, including many Lycastes, species, varieties and hybrids, which made the Bridge Hall Garden famous, will shortly be distributed by public auction. Lycastes are large flowered, some of them exceptionally so, and they have attractions in their quaintness of form and unusual combinations of colour. They are also very free flowering, and, with the exception of L. Skinneri, anyone can grow them in an ordinary greenhouse. There are a good number of hybrid [illegible] or more, all of garden origin, and these [illegible] sufficient claims as garden Orchids. About twenty-five species are known, most of which are represented at Kew, where they thrive fairly well, always excepting L. Skinneri, which behaves execrably there. The photograph of L. [illegible] reproduced in fig. 69 represents a Kew plant. They all like a little loam in the compost, and they require liberal supplies of water at all times except in winter when they are at rest, and even then the soil should not be allowed to get quite dry. With regard to L. Skinneri it is usual to speak of it as an easily grown Orchid. "One of the easiest of Orchids to cultivate," according to Messrs. Veitch and Sons' *Manual of Orchidaceous Plants*. This may be quite true at Bridge Hall, but like so many things that are easy, one has to know how they are done. *W. W.*

HYBRID ORCHIDS.

(Continued from March 2, p. 87.)

Hybrid.	Parentage.	Exhibitor.
Aeridovanda Mundyi	Ae. Vandarum × V. teres	Sir J. Colman.
Brasso-Cattleya Rosita	B.-C. Heni × C. Dowiana	Flory and Black.
Brasso-Laelia Jasper	B.-L. Jessopii × L. harpophylla	Flory and Black.
Cattleya Hercules	[illegible] × Empress Frederick	P. Smith, Esq.
Cymbidium Ellin	Parishii Sanderae × Pauwelsii	Sanders.
Cymbidium Lyra	eburneum × Gottianum	G. Hamilton Smith, Esq.
Cypripedium Beltrolus	bellatulum × Troilus Lord Nelson	Duke of Marlborough.
Cypripedium Clon[illegible]	Aeson giganteum × exul	F. Worsley, Esq.
Cypripedium Draconianum	Draco × Leeanum	Duke of Marlborough.
Cypripedium Houghtoniae	Haynaldianum × Rothschildianum	Sanders.
Cypripedium Myson	Mrs. Wm. Mostyn × Fairrieanum	Armstrong and Brown.
Cypripedium Ossian	Lord Ossulston × insigne Sanderae	Duke of Marlborough.
Cypripedium Saladin	Chapmanii × Olenus	T. Worsley, Esq.
Cypripedium Tantrolus	Earl of Tankerville × Troilus	Duke of Marlborough.
Cypripedium Valentine	Troilus var. Archimedes × Thompsonii	Mrs. J. Leeman.
Cypripedium Venusianum	Muriel Hollington var. Venus × Fairrieanum	Duke of Marlborough.
Cypripedium Vivian	bingleyense var. J. Wilson Potter × Hera Euryades	T. Worsley, Esq.
Dendrobium Pink Pearl	nobile album × viridescens	Sir J. Colman.
Laelio-Cattleya Ethel	C. Luddemanniana Stanleyi × L.-C. Canhamiana Rex	Sanders.
Laelio-Cattleya Eunice alba	L. anceps alba × C. chocoensis alba	J. and A. McBean.
Laelio-Cattleya J. Ansaldo	Haroldiana × unrecorded	J. Ansaldo, Esq.
Laelio-Cattleya Orange Blossom	Elinor × Trimyra	Sir Geo. L. Holford.
Laelio-Cattleya Pluto	Dominiana × Firebrand	Pantia Ralli, Esq.
Laelio-Cattleya Primrose	L.-C. Trimyra × C. Schroderae	Sanders.
Laelio-Cattleya Schroderae	L.-C. Bella alba × C. Maggie Raphael alba	Baron B. C. Schröder.
Odontioda Ariel	Odm. Crawshayanum × Oda. Cooksoniae	Armstrong and Brown.
Odontioda Cantuariae	Odm. crispum Lucianii × Oda. Latona	C. J. Phillips, Esq.
Odontioda Celt	Odm. laudatum × Oda. Joan	C. J. Phillips, Esq.
Odontioda Ceres	Odm. elegans × Oda. Charlesworthii	Col. Sir J. Rutherford.
Odontioda Gedelian	Oda. Royal Gem × Odm. eximium	C. J. Phillips, Esq.
Odontioda Hilda	Odm. Dora × Oda. Royal Gem	Charlesworth and Co.
Odontioda Juliet	Oda. Bradshawiae × Odm. Promerens	Charlesworth and Co.
Odontioda Marvel	Oda. Bradshawiae × Odm. Mars	Armstrong and Brown.
Odontioda Vuylstekeae tripudians	Oda. Vuylstekeae × Odm. tripudians	Sir J. Colman.
Odontioda Windsor	Oda. Sanderae × Odm. illustrissimum	Flory and Black.
Odontoglossum Amillus	Amethyst × illustrissimum	Dr. Craven Moore.
Odontoglossum Cerithe	Scottianum × Thais	C. J. Phillips, Esq.
Odontoglossum Chestan	Kilburnianum × Fascinator	C. J. Phillips, Esq.
Odontoglossum Rosslyn	Rolfeae × illustrissimum	Flory and Black.
Odontoglossum San Luis	eximium × Fascinator	Dr. Miguel Lacroze.
Odontoglossum St. James	amabile × Amethyst	Charlesworth and Co.
Odontonia Irene	M. Warscewiczii × Odm. hastilabium	Charlesworth and Co.
Sophro-Cattleya Atreus gloriosa	S. grandiflora × C. Lawrenceana	Stuart Low and Co.
Sophro-Cattleya Ramillies var. Mrs. J. Ansaldo	S.-C. Warnhamensis × C. Empress Frederick	J. Ansaldo, Esq.
Sophro-Laelio-Cattleya Beta	S.-L. Psyche × C. Maggie Raphael alba	Flory and Black.
Sophro-Laelio-Cattleya Margrand	S.-L.-C. Marathon × S. grandiflora	Flory and Black.
Sophro-Laelio-Cattleya Phryne	L.-C. Phryne × S.-L. Gratrixiae	Flory and Black.
Sophro-Laelio-Cattleya Virginia	S.-L.-C. Marathon × L.-C. St. Gothard	Sir Geo. L. Holford.

FRUIT REGISTER.

APPLE KING OF TOMPKIN'S COUNTY.

THIS variety is one of the best late-keeping dessert Apples. The fruit is somewhat ribbed and large for dessert purposes, but it has high colour, good flavour, firm flesh, and keeps well till late in the spring. The tree is a strong grower, and the roots need pruning frequently, especially when planted in heavy ground. When this has been done and the plant brought into a fruitful condition it is a heavy cropper. Another point in favour of this American variety is that the tree is very free from canker. The fruits illustrated in fig. 70 were gathered in the first week in November, 1917. *A. B. Waddy.*

FIG. 70.—APPLE KING OF TOMPKIN'S COUNTY.

The Week's Work.

THE KITCHEN GARDEN.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

SEAKALE.—Where root cuttings in sufficient quantities are at hand, now is a good time to plant them in land that is in good heart in rows made 15 inches apart, leaving a little less space than this between the plants in the rows. In the case of permanent beds the rows should be 3 feet apart and the plants 2 feet asunder. Plant three cuttings together in triangular fashion. Buds will probably be shooting from the thick end of the prepared cuttings, and when the roots are planted these crowns should be placed level with the soil. A top-dressing of salt applied either before or after planting Sea kale is beneficial, and especially on light soils. Remove all flower stems as they appear, and all but the strongest shoot. Seakale may also be propagated from seed sown now in drills made 2 inches deep and 15 inches apart, but propagation by cuttings is cheaper and better.

ASPARAGUS.—The best time to plant Asparagus is when the shoots are developing, and two-year-old plants are the best. Deep, rich, well-drained soil is necessary to grow good Asparagus, and the ground should be prepared in advance of planting as I advised on p. 112 in the issue for March 16. Mark out the beds as advised, and set three rows of plants on each 4-foot bed, allowing a space of 18 inches from plant to plant. Connover's Colossal and Sutton's Perfection are two excellent varieties, but such matters as position, kind of soil, and careful cultivation have most effect on the crop. Choose a dull day for planting, and carry out the work in an expeditious manner, exposing the roots to the air as little as possible. Now is a good time to sow fresh seed; thin the seedlings to one foot apart as soon as they are large enough to handle. Permanent beds should have all the roughest material raked into the alleys, and be dressed occasionally with a concentrated fertiliser. Salt is a good stimulant for Asparagus, especially on light soils, but should not be used until all danger from frost is over.

GENERAL REMARKS.—If fine weather continues endeavour to catch up arrears of work. Potatos, Carrots, Turnips, and other crops in frames need plenty of fresh air on all favourable occasions, or their growth will be weak. Thin the seedlings at an early stage of their development. Carrots should be 2 or 3 inches apart and Turnips 6 inches apart. Cauliflowers and Lettuce also require attention. Stir the soil amongst them when the conditions are favourable. Plants wintered in frames should be planted out in fine weather, and vacancies amongst other plants made good. The earliest sown Celery is ready for transplanting into boxes or frames provided with a moderate bottom heat. See that the plants are near to the glass. Peas and Beans that were sown in pots in pits or houses should be planted out after being gradually hardened. Put sticks to them at once, and some branches of evergreens by the sides to protect the tender shoots from cold winds for a few days. In fine weather stir the soil between all growing crops with the Canterbury hoe.

THE ORCHID HOUSES.

By J. COLLIER, Gardener to Sir JEREMIAH COLMAN, Bart., Gatton Park, Reigate.

PHAIUS.—Many species of Phaius, including P. Blumei, P. Sanderianus, P. Bernaysii, P. grandifolius, and P. tuberculosus, also such hybrids as P. Norman, P. Phoebe, and P. Cooksonii, which develop their flower-scapes from March onwards, should be top-dressed or re-potted as they pass out of flower. A suitable compost consists of three parts good turfy loam with the smaller particles removed, the remaining portion made up of A1 fibre cut rather short, and leaf-mould, with a liberal sprinkling of coarse silver sand. Ordinary flower-pots form the most suitable receptacles, and should be filled to one-fourth their depth with crocks for drainage. The plants have a robust root system and need ample pot room. Place the base of the plant a little below the rim of the pot to allow room for watering; make the soil firm about the roots and leave space on the surface for a layer of Sphagnum-moss. Water the roots sparingly at first, but when they are established let them have liberal supplies of moisture. Grow the plants in a house having an intermediate temperature, in a position where they will receive plenty of air without being subjected to draughts. Shade the foliage from strong sunlight. Fumigate the house on frequent occasions to destroy thrips, and sponge the leaves with an insecticide against scale insects.

MAXILLARIA.—Plants of M. candida, M. venusta, M. picta, M. stricta, M. nigrescens, and M. Mooreana are becoming active at the roots, and those needing fresh rooting materials should be given attention. The plants are best grown in pots or pans, filled with a compost consisting of Osmunda-fibre or A1 fibre, a little chopped Sphagnum-moss, and a liberal amount of crushed crocks. The receptacles should be well drained, and the materials pressed firmly between the roots. After they are re-potted grow the plants in a shady position and water them with extra care, pouring the water around the outer edges of the compost in order that it may not lodge in the young growths. Such species as M. Sanderiana and M. Lindenii that flower at this season are best grown in Teak-wood baskets, as the flowers often push downwards through the bottom of the receptacle. For this reason Fern rhizomes should be employed for drainage in preference to crocks. These two last-named species, also M. fucata, M. leucimata, and M. Hubschii, should not be potted until after they have passed out of flower. All the species named are best grown in an intermediate temperature.

ODONTOGLOSSUM.—Plants of Odontoglossum citrosmum having enjoyed a long season of rest are pushing up flower-spikes from the centres of the young growths, and may be afforded more moisture at their roots, but no water should be allowed to reach the centres of the growths, as this may cause the flower-spike to damp off and the young growth to decay. Plants of O. crispum or hybrids that are not flowering may be given more rooting space, but do not do this unless it is absolutely necessary. Plants with

young growths a few inches long that are growing over the edges of the pots may be turned out of their receptacles, all useless pseudo-bulbs removed, as much as possible of the old soil taken away, and the plants potted up afresh. After repotting afford water with great care, as an excess of moisture at this stage will cause the roots to perish and the pseudo-bulbs to shrivel. Plants that have recently flowered should be afforded but little water at the roots until after they are in full growth.

PLANTS UNDER GLASS.

By E. HARRISS, Gardener to Lady WANTAGE, Lockinge Park, Berkshire.

PELARGONIUM.—Pelargoniums of the Show section will soon be showing their flower-buds, and as the pots are filled with roots stimulants should be given to the plants. Large specimens should be carefully staked. Keep the plants growing quite near the roof-glass in a light house, and admit plenty of air when the weather is warm and genial. Pelargoniums should not be shaded until they are in flower. Those which have been propagated for flowering in late autumn and winter should be stopped to induce shoots to break from the base. Let them grow slowly on a shelf in a cool house till danger from frost is past. They may then be plunged in a bed of coal-ashes in a sheltered position out of doors.

VIOLETS.—Violets propagated last autumn from cuttings should now be planted out in a position not exposed to the full glare of the sun. Choose ground that was dug deeply and liberally manured at the end of last year. The soil should now be lightly forked over and the surface levelled with a rake. A dressing of wood-seasoned soot previous to this operation will be beneficial. The large single varieties may be planted about one foot apart, and the double sorts allowed 9 inches. Examine the plants carefully for red spider before they are planted, and should there be the slightest evidence of this pest dip the whole of the foliage in a strong insecticide. The leaves should also be subsequently syringed with the insecticide at regular intervals during the growing season. Well water the plants to settle the soil about the roots. In the event of cuttings not being available old plants may be divided when they have finished flowering, planting the most suitable portions as advised for cuttings. Plants which have been wintered out-of-doors will be most suitable for this purpose, as the young shoots will not be so drawn and weak as those which have been grown in a frame. Spray the plants lightly every afternoon until they are established.

EUPATORIUM VERNALE.—This Eupatorium is a most useful plant for winter flowering in the cool greenhouse. If grown in cool quarters it will follow late Chrysanthemums, and the flowers at a time when white blooms are scarce. Plants which have flowered here this season have not been disturbed at the roots for two years, but they have flowered more freely, and the flowers have been finer than ever before. This season we shall slightly reduce the roots and repot them into receptacles of the same size as before. Eupatorium vernale is easily propagated from cuttings rooted in the spring. The cuttings may be dibbled into small pots in a sandy compost, and placed in a propagating frame.

THE FLOWER GARDEN.

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

PENTSTEMON.—Pentstemon is rooted in frames may be transferred to the positions in which they are to flower. It is a curious fact that late planting with these flowers, or at least with the large-flowered section, has a very injurious effect on the production of bloom. Spring struck cuttings not sufficiently hardened may be kept in the frame for a little longer, but the planting of these too should not be long delayed. Plants of the hardy P. campanulatus should be pruned hard, and P. heterophyllus planted as soon as convenient. The latter plants need pinching, failing which the habit is loose.

BEET.—Ornamental Beet has long been given a place in the flower garden, and seeds may be sown at any time now, dropping three or so at every 9 inches apart. Besides the Dracæna-leaved, Whyte's Black and Dell's Crimson are suitable varieties for this purpose, and both are valuable from the culinary point of view. I am using Beet in conjunction with single Paw Dahlias. I should have noted in an earlier calendar that Carpots sown and intermixed with Godetia Double Rose are only slightly evident in summer. A stump-rooted variety should be chosen for this purpose.

SCARLET RUNNERS.—Runner Beans were admitted decorators of the flower garden in the 16th century, and in this year of the 20th century I am preparing to give them another innings in borders. To have early, strong plants it is essential to raise them under glass, planting one seed in a 5-inch pot, and germinating the seeds in a warm house, being careful to keep the plants well ventilated, and transferring them to a cold pit or frame at the earliest moment it is safe to do so. The plants should be pinched when quite small, and the pinching continued from time to time till the plant assumes a dwarf habit. Each plant when placed out of doors should have a space of at least 3 feet, and if more than one row is planted there should be a space of 4 feet at least between the rows. Gather the pods for use as they get large enough, and this must be kept in view when planting, so that facilities for getting to them may be provided.

FRUITS UNDER GLASS.

By W. J. GRIER, Gardener to Mrs. DUMPLETON, Keele Hall, Newcastle, Staffordshire.

EARLY PEACHES AND NECTARINES.—When the trees in the earliest houses are at the stoning stage, do not attempt to hasten the process by the use of much fire heat. When it is desired to ripen fruits very early more warmth must be employed after the stones have formed, and the temperature may be increased to 60° after the borders are closed, with plenty of moisture in the atmosphere. The night temperature however, should not exceed 65°, with a little air admitted through the top ventilators. The daily work of watering, syringing and ventilating should be carried out as usual. There need be no hurry about tying the shoots too closely until the fruits are at their second swelling, but when that stage is passed the final thinning and tying of the shoots should be done, and the crop completed. The thinning of the fruits should be done with great care; beyond removing any that are misplaced or very close to each other no more should be removed until after the period of stoning is passed, unless the crop be a heavy one, in which case it is advisable to lighten it somewhat, to prevent exhaustion of the trees' energy. A Peach or Nectarine fruit should have at least 9 square inches of surface, those growing behind branches or under the foliage never attain their proper size or flavour. Some effort should be made to turn or support these fruits with their points to the sun. Pieces of laths, or blinds tied on the trellis under the fruits will keep them in position. Directly the final thinning is completed established trees may be mulched and copious supplies of warm liquid manure, with occasional dressings of a concentrated fertiliser, must be given to the roots. A light mulching will be beneficial to young trees carrying large crops

THE HARDY FRUIT GARDEN

By JAS. HUDSON, Head Gardener at Gunnersbury House, Acton, W.

STRAWBERRIES.—It is advisable to prepare for the making of Strawberry beds well in advance of planting, although it does not follow that the ground should remain fallow. Where it is intended to plant pot specimens that have been forced, the ground should be got in readiness for planting by the end of April, and planting may continue until mid-May. I have not found that planting earlier than this is on the whole satisfactory. Such forced plants will, if well cared for, yield a fair crop early in the autumn following. The varieties Vicomtesse Héricart de Thury and Royal Sovereign are suitable for the purpose. The former sort will give ripe berries about ten days earlier than the latter, and the two together will furnish fruits over a space of five weeks. Attention must be given to watering the plants until they are well established. Having lightly forked the old ball and removed the drainage, let them be placed quite firmly and well covered. Give a good watering at once, and apply a mulch at the same time, but light and shallow. Should the first blooms show somewhat prematurely, a few of these may be pinched off. Do not attempt to top with anything else; this would only lead to failure. These Strawberries should be planted in a sunny border; the two sorts recommended being with early varieties, the plantation can be useful in subsequent seasons. I have found the quality and firmness of Royal Sovereign to be improved in these late crops. Let the soil be dug deeply, and break it down at once preparatory to planting, use well-decomposed manure in the second spit, and before planting give a dressing of lime and hoe it lightly into the soil. Make the ground firm before planting. The soil for an ordinary Strawberry plantation in the kitchen garden should have been trenched for a previous crop, and when the runners are ready for setting out it will only require forking deeply. Nothing can be done to it just now, but having fixed on the site let the ground be kept clear of weeds and aerated by frequent hoeings. Whatever crop the ground may be carrying at present, do not let any of it remain after the first week in August, even if it entails a little sacrifice. Where late varieties are grown for special late cropping, a border facing north should be selected and held in readiness for planting the runners early in August. Like the rest of the garden, it may just now be under a crop, but do not neglect to keep an eye on its future use for Strawberries.

THE APIARY.

By CELSUS.

SPRING EXAMINATION OF HIVES.—From what I have learned from several very enthusiastic beginners a large number of colonies have been sacrificed by too inquisitive learners examining the bees during weather that was highly unsuitable. It is a pity they have had no one to guide them at a time when we can ill spare the bees; because first, the honey is badly needed, and second, the bees are urgently required to pollinate the fruit bloom. When the weather is warm in the middle of the day, and the sun shining brightly, an examination of the brood chamber may be safely made. The examination should be thorough. First it is essential to make certain that there is a queen at the head of each stock. Next it should be ascertained that she is laying, in which case the brood and eggs will be found in the central combs. This done, the queen may be stimulated to further egg production by uncapping some of the honey. Where the food stored is on the hot side give the bees a cake of candy; it is too early to give them syrup. In some instances bee-keepers space the combs widely; this should now be changed so that the space from centre to centre of the combs is 1¼ inch. Remove all empty combs and close up the brood nest by means of the division boards. Where colonies are found to be queenless move the queenless hive 2 yards daily towards another hive, and later unite the two stocks; or where a queen is known to be a drone breeder she should be removed and the colony united to another stock. In these days of sugar shortage it may be possible to remove a frame or two of sealed honey from a stock well provided for. Remove all dead bees from the floor-board, keep the entrances well contracted, wrap up the hive warmly, and see that the roofs are water-tight.

CLEANING HIVES.—Those who have a stock of old hives will be well advised to cleanse them thoroughly for the reception of possible swarms. All hives, frames, and floor-boards that have been in use should be thoroughly scalded. After this has been done they should be stood in a position exposed to the sun, and when quite dry painted with a carbolic mixture made of Calvert's No. 5 carbolic acid one part, and two parts of water. The empty combs should be sprayed with ½ teaspoonful of soluble phenyl in one quart of water, but before doing this fumigate the combs with burning sulphur

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APPOINTMENT FOR THE ENSUING WEEK.

THURSDAY, APRIL 18.
Manchester and N. of England Orchid Society meet.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 47°.

ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, *This day*, April 13, 10 a.m.: Bar. 29·9; temp. 47° Weather: Rain

The Quality of Agricultural Seeds.*

The Seed Testing Station recently established by the Food Production Department has lost no time in getting to work. As early as February over 2,400 samples had been tested and reported upon. Of the seed Wheat tested, 47 per cent. of the samples germinated 95 per cent. or over; some samples, however, germinated only 12, 10, and even 6 per cent., and two were contaminated with the disease known as bunt. Seventy-four per cent. of the samples of Barley germinated 95 per cent. or over, but some poor samples germinating only 50 to 60 per cent. were received. Nine per cent. were badly infected with the spores of "closed smut."

The germinations of the samples of Oats were:—

40 per cent. germinated 95 per cent. or over.

54 per cent. germinated 80-95 per cent.

5 per cent. germinated 61-79 per cent.

1 per cent. germinated less than 50 per cent.

Of the Scotch Oats none germinated less than 80 per cent.

Most of the samples received had been well cleaned, but a few dirty samples contained weed seed, such as Black Bindweed, Cleavers, wild Radish, Cornflower, and Charlock.

As illustrating the seriousness of even a small percentage of impurity, the Report gives an example of a sample of Oats which, though showing less than ¼ per cent. of Charlock, was estimated to contain 10,000 seeds of this weed to the bushel of grain.

The samples of Peas and Beans were generally good, but in some cases only germinated from 36-56 per cent., and the seed had been attacked by the Bruchus weevil.

Of roots, the range of germination of Turnip seed was from 100 to 3 per cent., with an average of 86; Swede samples showed germinations ranging from 99 to 0 per cent., with an average of 82 per cent.; Kale, from 95 to 23 per cent.; Cabbage, from 95 to 56 per cent.; Beet, from 156 to 13 per cent., with an average of 88; Onion samples germinated in the best cases 100 per cent., and in the worst 4, with the very fair average of 76 per cent.; Parsnips showed similar diversity from 80 per cent. to 2 per cent.; and Carrot ranged from 71 to 6 per cent. It is evident from the figures relating to vegetable seeds that there are some very bad seeds on the market; for example, in the case of Beet, 62 per cent. of the samples germinated under 90 per cent., which, in view of the fact that each so-called seed—in reality a group of fruits—may throw two or three seedlings, is a very poor showing.

In the grasses and Clovers impurities and germination both show a great range of difference between the samples; the highest percentage of impurity was in white Clover, which showed an average impurity of 9·8 per cent. Red Clover ranged in germination from 97 to 2 per cent., and contained on the average 3·2 per cent. of impurities. The Report insists on the importance of the greatest care being taken in the purchase of the Rye grasses and red Clovers, which are sown in large amounts, and, as the figures given indicate, often contain considerable quantities of weed seeds.

In the case of red Clover, Dodder in greater or less amount occurred in 34 per cent. of the samples, and three samples contained over 1 per cent. of this parasitic weed. The Chilian Red Clover gave the highest germination, but was the worst offender with respect to Dodder.

The general conclusion reached by the Report is that there will be a large amount of low-grade seed offered to farmers this season, but that nevertheless good seed in moderate quantities is available in the case of the more important crops.

The Report reflects the greatest credit on the personnel of the Seed Testing Station, which must have worked at the highest possible pressure to achieve such considerable results in so short a time. We hope that a readable and attractive summary of this Report will be published and distributed widely. There is ample material in the Report for a series of extremely interesting articles, and we suggest that some bright-minded botanist with a touch of imagination should be employed to draw up from the material on which the Report is based illustrated articles, all of which should be directed to showing the wisdom of sowing good seed and the folly of sowing bad.

* *The Journal of the Board of Agric.*, XXIV., No. 11.

ROYAL HORTICULTURAL SOCIETY'S EXAMINATIONS.—The Council of the Royal Horticultural Society has decided that, in the General Examination, the questions shall cover a wider field in practical horticulture, and be less botanical. The standard for pass will be raised, and the examination itself divided into morning and afternoon sessions of 2½ hours each. The School Teachers' Examination will be divided into two sections, the Ordinary Pass and the Honours—the latter being optional. For the Ordinary, the questions will be made to refer distinctly to practical horticulture in school and allotment gardens, and candidates will have to produce a certificate of having done practical work, signed by some responsible person. The examination will be divided into morning and afternoon sessions of 2½ hours each. An Honours Examination will be added to the Ordinary for school teachers willing to take it. Candidates will also be allowed to specialise on such subjects as: (a) Hardy fruit growing; (b) vegetable growing; (c) hardy plant cultivation; (d) plant diseases and pests, any of which may be taken at the candidate's choice. A practical test of the candidate's knowledge and skill will also be made under the supervision of one or more of the examiners, centres for which will be established in various parts of the country. Before sitting for Honours candidates must have passed the Ordinary School Teachers' Examination. A separate certificate will be granted to each teacher passing with Honours.

GARDENERS' RATIONS.—We are informed that the British Gardeners' Association has received information from the Ministry of Food that gardeners are included in the list of those entitled to a supplementary ration, and will be guided under Class E. Enquiries should be addressed to the Local Food Office.

MRS. G. H BARD.—The many friends of Mr. GEORGE HENRY BARD, manager of Messrs JAMES CARTER AND Co.'s nursery at Forest Hill, will learn with regret of the death on Tuesday last of Mrs. BARD.

L.C.C. GARDENERS.—Following an application made to the London County Council by the British Gardeners' Association, an increased war bonus will be given to gardeners in the L.C.C. parks, the bonus to be brought to the level of that paid to other Council workers. The Council has increased the war bonus by 5s. per week, making 14s. in all. This increase is retrospective, dating from January 1, 1918.

HOME-MADE JAM.—There appears to be some doubt regarding the use to which sugar for home-made jam may be put. It is for fruit and Rhubarb, and, in the discretion of the local Food Control Committee, for Marrow. It is very probable that sugar for Marrow jam will not be granted in most districts. In making special allotments of sugar through the Local Food Committees under the scheme for providing fruit-growers with sugar for domestic preserving, no account will be taken of any sugar saved out of the weekly ration. The saving of sugar out of the domestic ration for jam-making not only does not constitute hoarding, but is a course desirable in the public interest.

SEED AND TRANSPORT.—According to what appears to be a well-informed statement,* the slowness of the transport of seed from America appears, in part at least, to have been due to a failure on the part of the responsible authority in America to recognise that seed is food. Hence, in spite of efforts made by growers, shippers, and officials of the U.S. Department of Agriculture, the railway transport of seed was held up, having to give precedence to the transport of food. We believe that every effort was made, and in good time, on this side, to facilitate the early arrival of seed supplies.

* *The Seed World*, Chicago, Ill., March 5, 1918.

EVE'S APPLE.

The interesting article on St. Cecilia's Apple on p. [illegible] suggests to me that you might admit a few words on another Apple, equally interesting botanically, and, to some, far more interesting biblically and mythologically.

No work, I believe, discusses the question concerning the species of the oldest recorded tree, yet the evidence that the Tree of Knowledge was a Pomegranate tree is remarkable. The Forbidden Fruit is the only fruit connected with man's religious history; the Pomegranate is the only fruit used symbolically in the Hebrew Church; and the explanation of these two facts seems logically to be that the Pomegranate was the Forbidden Fruit. And the Bible [illegible] bears out this conclusion.

Botanically the Pomegranate answers remarkably to the requirements of the Forbidden Fruit. The Forbidden Fruit is almost universally called an Apple. The Pomegranate bears the names of Granate Apple, Granada Apple, P[illegible] Apple, [illegible] Apple [illegible] Dr. T[illegible] [illegible] Apple [illegible] [illegible] Apple [illegible] others [illegible] garden of Hesperides, with its golden Apples [illegible] adopted [illegible] Moses [illegible] Eden [illegible] Fable [illegible] New Chambers [illegible] *Encyclopaedia* [illegible] 507, says the Pomegranate is [illegible] [illegible] [illegible] mind [illegible] the Apple [illegible] and the Pomegranate [illegible] Dr. Fraser [illegible] [illegible] Pomegranate tree [illegible] [illegible] Countries [illegible] "low growing tree." Eve's fruit was good for food and pleasant to the eyes. [illegible] Pomegranate [illegible] the taste [illegible] it is pleasant to the eyes. Ayre says: "Botanically considered, the Pomegranate [illegible] [illegible] It is [illegible]" (*Treasury of Bible Knowledge*, 712). Paxton [illegible] species. [illegible] remarks: "Its peculiarities are so great, in the opinion of many botanists, as to justify its [illegible] a separate order, Punicaceae" (*E. Brit.*). This speciality remarkably suits a tree chosen for a special purpose. It is "a stout thorny bush" (Thorne), thus suitable for a prohibited plant, and its infringement was punished by Thorns and Thistles. It has the unique "two whorls of carpels," called by botanists a "crown"—a suitable fruit to tempt the crown of womanhood with. In Eastern countries it is "the symbol of fecundity in women," and Eve was the fertile mother of all living. It contains innumerable seeds, suitably symbolical of the first race. It has "blood-red flowers" and seeds "dyed with red," symbolically suitable for the fruit which made necessary the blood of Atonement. The Romans used every part medicinally. Bacon thus recommends it. All parts are used for various purposes. The monumental and mythological evidence is remarkably confirmatory. *G.*

HOME CORRESPONDENCE.

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

Pyracantha Gibbsii.—Your illustration and [illegible] of this new species (p. 47, fig. 21) interested me very much. I see that it was [illegible] by Mr. Vicary Gibbs in 191[illegible]. I should like to be allowed to point out that I exhibited this species, and another smaller and [illegible]-leaved specimen, at the Horticultural Society's show at Vincent Square in the month of March, 1913. The latter has since been described in your pages as Pyracantha crenulata var. Rogersiana by Mr. A. Bruce Jackson, and named, with the approval of the Kew authorities, after me. I, however, on the occasion of showing, was not the fortunate recipient of any Award of Merit, nor did my exhibits receive any attention or recognition from any Committee concerned in its administration. I was unable even to extract an opinion of them from anyone connected with the show. The two species were in the next year, 1914, sent to Kew for observation upon and identification, and I have a long correspondence on the subject before me. To the one called now after Mr. Vicary Gibbs they for the time being demurred to giving any individual identity. The one now named after me they consented to regard as a new species, and gave me the honour of giving it a name. These are a few outlines of my attempts to focus attention upon two of the Chinese importations by Wilson and Forrest, that promise to be valuable for our landscape in the shape of evergreen, hardy, flowered and berried members of the Hawthorn family, lighting up [illegible] [illegible] among the deciduous surroundings of our hardwood trees upon our grassy ground and parklands. I have planted a good many about the grounds here, and in the park, and find that those which flourish the best have been planted in a stiff clay soil with a northern aspect. *Chas. Coltman Rogers, Stanage Park, Radnorshire.*

Fig. 71.—Narcissus Jeannette (half size).
(R.H.S. Award of Merit, April 9, 1918. See p. 161.)

I gather from Mr. Rogers' note above that he exhibited these Chinese Pyracanthas before the Floral Committee of the R.H.S. in 1912. The Forrest plant was subsequently named Pyracantha crenulata var. Rogersiana by me at his request, but I was not then aware that the Wilson plant formed part of his exhibit on the occasion mentioned. Moreover, I want to make it clear that I alone am responsible for describing these Pyracanthas as new, although the Kew authorities were consulted about them at the time. So far as I know there was no question of demur by Kew as regards the Wilson plant described by me as P. Gibbsii, which I was the first to suggest should be given specific rank. The Forrest plant raised by Mr. Rogers from seed was sent by him to Kew for an opinion, and was compared there with dried material of the Himalayan P. crenulata, but was not considered to be sufficiently distinct to be worth naming. However, after studying the plant for two seasons at Kew in conjunction with P. crenulata and P. Gibbsii, I found it worthy of varietal rank. Its distinguishing characters are set out in my paper which was published in the *Gardeners' Chronicle* for Dec. 30, 1916 (p. 309). At the time Mr. Rogers exhibited the specimens they were small plants in pots, and having neither fruits, flowers, nor names would consequently not receive special attention in the shape of an Award of Merit. *A. Bruce Jackson.*

The Influence of Kew.—As [illegible] [illegible] Kewite, I enjoy immensely the note by H. H.

on Kew. In his April contribution he asks why Kew has apparently so little influence on the character of ornamental gardens and pleasure grounds generally. I contend that Kew plays a much more potent part in determining the character of our shrubberies and other features of gardens than H. W. imagines. At the same time, I agree with him that the influence exerted is not in proportion to the wonderful advertisement the glories of Kew obtain through its millions of visitors. This, I think, can be fairly easily accounted for. Up to the time when a charge was made for admission, the bulk of the visitors were simply people seeking pleasure and a little interest, through observing the more sensational aspects of the plant-world as demonstrated in, for instance, a glaring collection of Begonias or Hippeastrums or in the truly beautiful breadths of Daffodils. Of later visitors, many, though keenly interested and observing, are quite unable to assimilate the enormous array of beautiful and interesting features presented by the gardens at almost any time of the year. There are probably very few who visit Kew with the main object of noting effects for application elsewhere. Hence Kew remains unique. There are, of course, other factors at work which circumscribe the influence of Kew. A sense of practicability mainly directs the average landscape gardener, whether operating in a public park or around a private mansion, to utilise plants which, though stereotyped, are easy of cultivation. He believes in a healthy Laurel rather than in a fastidious Rhododendron, to put it in the extreme sense. I agree, however, that there is a lack of enterprise on the part of both the amateur and professional. *Chas. W. Mayhew, Northumberland County Horticulturist*

LATHYRUS GRANDIFLORUS.—In the issue for Aug. 26, 1916 (p. 105), you published a note from me on the fertilisation and seeding of Lathyrus grandiflorus. Almost by return (allowing for the postal distance) I received a request from a gentleman at Adelaide, N.S.W., for seeds, if I had them to spare. I was unable to send them that year, but managed to save some seed during the past season, which I was pleased to send him, and which he has duly received. This little transaction has probably been the means of introducing a most beautiful plant to Australia. While on this subject, would it be possible to clear up what seems to be an error in Nicholson's *Dictionary of Gardening*, where L. grandiflorus is described as an annual climber? It is certainly a perennial climber. *G. Lamb, Mondelet, Hextable, Kent.*

SOCIETIES.

ROYAL HORTICULTURAL.

APRIL 9. The exhibition held in conjunction with the fortnightly meeting on Tuesday last was small, but included many items of interest.

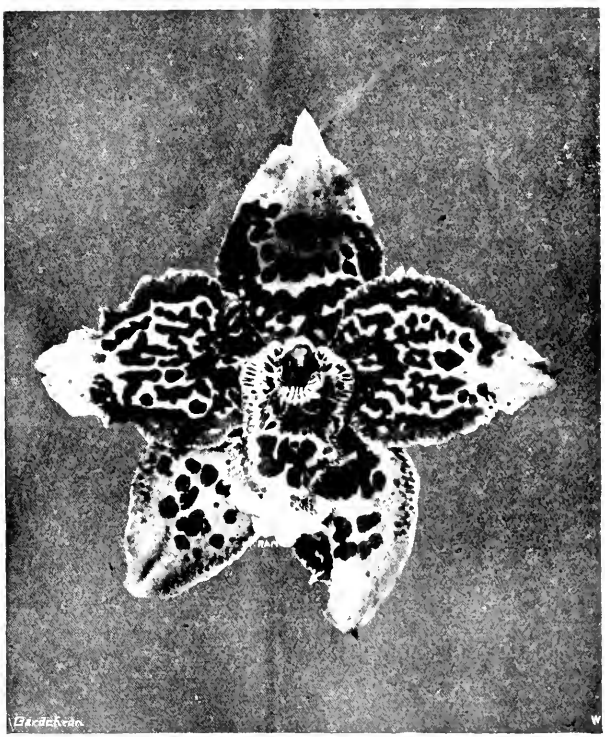

FIG. 72. ODONTOGLOSSUM JASPER VAR. ROCHAMPTON (See Awards of the Orchid Committee.)

As might be expected at an April show, Daffodils were conspicuous, the groups of these flowers consisting for the most part of either seedlings or the very choicest and latest varieties. The Narcissus and Tulip Committee recommended an Award of Merit to the variety Jeannette (see fig. 71).

As usual, Orchids were shown exceedingly well by trade growers and amateurs. Several novelties received awards from the Orchid Committee.

In the floral section there were one or two good exhibits of Roses, but the majority of the collections were early-flowering subjects, serving to remind us that as yet spring has but just begun. One new Rose received an Award of Merit, the name being Golden Ophelia; this was the only award given to a novelty in the floral section. Mr. J. ANSALDO, Mumbles, showed a pretty coloured Primrose of the shade known as "Bishop's Violet." (*Rep. de Couleurs*, II., 139, Ton. 4). The flower is named after Mrs. Ansaldo; no award was made to it. The Floral Committee awarded nine medals to groups, of which the best was a collection of hardy flowers shown by Mr. G. W. MILLER. This exhibit included seasonable subjects, such as Daffodils, a splendid variety of coloured Primroses, Fritillaria Imperialis, Aubrietias, Double Daisies, Primula Juliae, and Saxifraga Beauty of Letchworth. Messrs. B. R. CANT AND SONS showed excellent Roses, including a large epergne of their new variety, Golden Ophelia, as a centre-piece. Other conspicuous varieties were Joan, Laurent Carle, Mme. Ravary, and Dean Hole. Mr. GEO. PRINCE also showed Roses, with a background of yellow Rosa Banksia.

Messrs. R. GILL AND SONS showed Rhododendrons, the chief feature of their exhibit being a great mass of R. Falconeri, the trusses of which were of exceptional size and vigour. Several Chinese species were shown, including R. yunnanense (white, with red spots), R. Davidsonii (mauve), and R. Augustinii (blue). Of the large-flowered type, Lady Alice Fitzwilliam (large, white fragrant blooms), and Gill's Triumph (red), were the most noticeable. Messrs. H. B. MAY AND SONS showed their usual fine exhibit of Ferns, using as a centre-piece a healthy specimen of Platycerium grande. Groups of hardy flowering trees and shrubs were shown by Mr. L. R. RUSSELL and Mr. C. TURNER respectively: Mr. TURNER'S exhibit included many beautiful Magnolias, double-flowered Almonds, some with white and some with pink blooms, the very floriferous Prunus triloba, and a dark red Ribes sanguineum named splendens.

At the 3 o'clock meeting of the Fellows Mr. F. CHITTENDEN delivered an address on the subject of "Some Experiments in Potato Growing."

Floral Committee.

Present: Messrs. H. B. May (chairman), J. Green, H. Cowley, John Heal, C. R. Fielder, A. Turner, W. Howe, C. Dixon, John Dickson, W. P. Thomson, J. Hudson, W. J. Bean, J. W. Barr, W. Cuthbertson, S. Morris, J. T. Bennett-Poë, E. H. Jenkins, C. E. Pearson, R. W. Wallace, G. Harrow, and Geo. Paul.

AWARD OF MERIT.

Rose Golden Ophelia. A hybrid Tea variety raised from Ophelia, with medium-sized blooms of very pretty shape. The colour is pale, clear apricot in the centre, with lighter margins. The foliage is exceptionally vigorous, and very dark green. The variety is recommended for forcing, and the blooms would be admirably suited for coat-flowers.

GROUPS.

The following medals were awarded to collections:—*Silver Flora Medal* to Mr. G. W. MILLER, for spring flowers. *Silver Banksian Medals* to Messrs. R. GILL AND SONS, for Rhododendrons; H. B. MAY AND SONS, for Ferns; Messrs. B. R. CANT AND SONS, for Roses; Mr. G. PRINCE, for Roses; Mr. G. REUTHE, for hardy flowers and shrubs; Mr. L. R. RUSSELL, for flowering shrubs; Mr. C. TURNER, for flowering trees and shrubs; and Messrs. PIPERS, for shrubs and Alpines.

Orchid Committee.

Present: Sir Jeremiah Colman, Bart. (in the chair), Sir Harry J. Veitch, Messrs. Jas. O'Brien (hon. sec. retiring), Frederick J. Hanbury, J. Wilson Potter, Pantia Ralli, E. R. Ashton, Fred Sander, Arthur Dye, J. Charlesworth, S. W. Flory, J. J. Lucas, W. H. Hatcher, W. J. Kaye, Walter Cobb, R. A. Rolfe, and R. Brooman White.

AWARDS OF MERIT.

Odontioglossum crispum Oakwood Triumph, from Mrs. NORMAN C. COOKSON, Oakwood, Wylam-on-Tyne (gr. Mr. H. J. Chapman). A grand hon raised variety, between O. crispum Pitcairnianum and O. c. Leonard Perfect, the latter famous variety influencing the fine shape and general characters of the flower, its rich ruby-red blotching being deepened and extended over the inner two-thirds of the segments in confluent blotches, the broad margins and tips being white. The lip is white in front with chestnut-red blotches in front of the yellow crest.

Odontoglossum Jasper var. Rochampton (see fig. 72) (*amabile* × *crispum*), from Dr. MIGUEL LACROZE, Bryndir, Rochampton (Orchid grower

Miss Robertson. A superb variety, and one of the best of its section, the flowers being large, of perfect shape, and beautifully blotched. The ground colour is white tinged with mauve; the inner parts of the segments are closely spotted with claret-red, and the lip bears dark red blotches in front of the yellow crest. The spike bore eleven flowers.

Odontioda Ernesto-Odier 'Wilhamina' × *Odontoglossum Ossulstonense*, from E. R. ASHTON, Esq., Camden Park, Tunbridge Wells. A pretty and distinct hybrid of the yellow ground section, of good size and shape. The segments are dark buff-yellow, and the greater part of the surface is heavily blotched with dark blood-red. The sepals have a rose shade and dark red blotches at the base; the much-crowded crest

PRELIMINARY COMMENDATIONS.

Odontioda Ernesto-Odier 'Charlesworthii', from Messrs. CHARLESWORTH AND CO., Haywards Heath. A large and finely formed bronze-coloured variety of the typical white petalled race.

Odontioda Amazone-Cooperi × *Odontoglossum Ossulstonense*, from Messrs. ARMSTRONG AND BROWN, Orchid Nurseries, Tunbridge Wells. A somewhat large bronze-coloured flower, with large and broad petals, the two parts of the segments being clusters of ruby-red blotches.

GROUPS.

Mrs. OSBORNE, The Shrubbery, Oxford, for Mr. Bennett-Poë, exhibited a selection of Orchids which had previously secured awards, including *Miltonia* 'Hyeana F. M. Ogilvie,' white, with a mauve mark on the lip; *Brassia Pittiana* 'Clinton Macmillan,' F.C.C.; Fowlerii varieties, and the rare *Cochlioda Noezliana* Harris's Sunrise variety. Mr. Bennett-Poë's malmaison carnations, for which a First Class Certificate was awarded on Sept. 26, 1911.

Messrs. ARMSTRONG AND BROWN were awarded a Silver Flora Medal for a very fine display of fresh flowered Orchid blossoms and Orchid plants, including several kinds here noticed for the first time. Odontioda blossoms, Odontoglossum varieties, various hybrid Orchids, and the handsomely blotched flowers of *Cypripedium* species were also noticeable. Of Cypripedium hybrids, the Orchid Committee awarded Award of Merit to *C. Actæa* 'Betty' and Memoria Lord Kenyon,' both raised by Orchidhurst, and the Award of Merit to *C. Actæa* 'Mrs. Pethy,' the latter a pretty and distinct variety, with the petals and lip heavily spotted.

Messrs. CHARLESWORTH AND CO. were awarded a Silver Flora Medal for a group composed principally of fresh flowers and well-flowered Orchid plants and Odontiodas, with Lælio-Cattleya Britannia and Odontioda Margot Sander very well seen.

Messrs. C. E. WALTERS AND CO., Ryecombe, Sussex, received a selection of pictorially flowered Daffodil blooms, for which a Bronze Banksian Medal was awarded.

H. H. PEEL, Esq., Rosslyn, staged at Hill Top Mr. Thompson's choice Cyclodinum Lemoinum Rosslyn variety, raised between *C. Lemoinum* and *C. insigne* Sanderæ hybrid.

Narcissus and Tulip Committee.

Present: Messrs. E. A. Bowles in the chair, W. Poupart, W. B. Crundle, R. A. J. Bennett-Poë, Herbert Chapman, W. F. M. Copeland, Henry Backhouse, F. Burchard, Peter B. Barr, G. Bunhe, R. W. Wallace, the Rev. Joseph Jacob, and Chas. H. Curtis (hon. sec.).

AWARD OF MERIT.

Narcissus Jeanne (exhibited by The Misses Willmott), a comparatively large (2 in. of fine form and white flowers held well erect on stout stems that are nearly 18 inches long. The wide perianth segments are pale sulphur-yellow, and the well-behaved trumpet is light yellow, with a lemon tinge and has a frilled rim. The variety received the award as a show variety, but it promises to be useful alike for market and for garden decoration. Shown by Mr. W. F. M. COPELAND.

GROUPS.

Mr. COPELAND, Shirley, Southampton, showed nine nice varieties of Daffodils, and the Rev. G. H. ENGLEHEART staged a number of fine seedling Daffodils, including an outstanding, rich golden-yellow, APEX variety, larger than King Alfred, with a beautifully frilled trumpet, and waved perianth segments suggestive of descent from Golden Spur. This flower, some white trumpet Daffodils, and a seedling of the Red Beacon type, attracted much attention.

Messrs. HERBERT CHAPMAN, LTD., Crewe, staged a well-staged group of Narcissi. The display was rich in Poeticus varieties, including Actæa, Seagull, Sappho, Vilmorin, and Hermione, and near by, surrounded by many seedlings, were the King Alfred and other types, including Cassis, Queen of Bermudas, White Queen, and Great Warley varieties. (Silver-gilt Banksian Medal.)

Messrs. BARR AND SONS exhibited a large number of varieties and named varieties. Many of the novelties were represented by one flower only. Of mixed sorts we made special note of the flame-coloured Red Beacon and Red Emperor, the latter of no mean rank as to the popular Emperor. Cleopatra, Sunrise, and Flower of Spring. (Silver Flora Medal.)

Mr. C. H. CURTIS, Alverstoke, Hampshire, staged about 100 fine cut blooms of Narcissi, chiefly the varieties recently in Barr's Record. (Silver Banksian Medal.)

Mr. W. F. M. COPELAND exhibited seedling Narcissi. Each flower of the group received an Award of Merit, the varieties Queen Elizabeth, Madge, and Mucha were of considerable beauty and interest.

Mr. JARDINE showed a few Daffodils grown in his garden at Balham.

Fruit and Vegetable Committee.

Present: Messrs. J. Cheal in the chair, W. Poupart, Owen Thomas, Edwin Beckett, W. H. Divers, G. P. Baker, and W. Wells.

AWARD OF MERIT.

Lapageria Rosea Superba. Four examples of specimen size and in fruit were both attractive and interesting. We understand that the plants were raised from Bramleys Seedling, a variety of note in the general estimation of all admirers of that popular table fruit. Shown by Mr. HERBERT NORTHEY, Sandy.

The Committee made a visit to the Potato Conference meeting to meet those in charge of the Wisley Gardens, and for history of the day see report on April. Harry Pring, for which a Banksian Medal was awarded. Shown by Mr. W. PRINCE, Crown Gardens, Bedford Road.

BRITISH FLORISTS' FEDERATION.

APRIL 3. Only about twenty retail florists were present at the meeting of the Association held at Essex Hall, Strand, on the 4th inst. Mr. George Munro, junr., gave a statement of work accomplished. Mr. W. H. Page referred to the advantages of co-operation among growers and salesmen during the past year; whilst Mr. Robert H. Page emphasised the point that all retailers should join an organisation already established. Mr. Morgan Veitch said that legislation during war and difficulties after the war might be such that the flower trade would find itself left behind unless every section of it combined for the common good.

Mr. C. H. Curtis referred to some special lines in which the Federation had rendered great assistance; he suggested every member should act as a local hon. sec., and expressed the hope that ere long there would be a Horticultural Advisory Committee to assist the Board of Agriculture.

A resolution was passed asking the Royal Horticultural Society to call a meeting of representatives of trade associations for the purpose of taking steps to secure the formation of a Board of Horticulture.

Some of the retailers present felt that the Federation should offer them some inducement to join. Mr. Ladds and the president pointed out that the retail florists were not organised where as the growers and salesmen were, and were now offering retailers all the help that a successful organisation could afford, and the retailers would have their own sub-committee to deal with retail matters.

CROPS AND STOCK ON THE HOME FARM.

REARING CALVES.

THE various orders issued by the authorities may so considerably that methods of procedure require frequent readjustment. Milk and butter are so valuable that every means should be taken by the dairy farmer to rear all the better calves possible in order that the milk supply shall not be lessened in the future. The recent order to kill bull calves necessitates the home consumption of more milk, although these animals should be killed as early as possible, to save milk. In the case of pedigree Shorthorn calves of either sex, where size and quality are of almost importance to future stock purposes, the calves should be allowed to run with their mothers several months, which is the means of providing ample home and flesh. To the stock farmer the economical rearing of heifer calves is much more important in the saving of meal required during the winter. He calf should be allowed to feed from its mother for three days after birth. After that period it should be removed to a separate box and fed artificially. In the morning and evening give to each two quarts of new milk, preferably that from its parent. At the end of a fortnight alter the treatment by adding one quart of separated milk to the four quarts of new milk for another two weeks. Then, in place of the new milk, substitute warm skim or separated milk, adding some calf meal. I prefer Bibby's Cream Equivalent, of which one short pint is mixed with the milk. Continue this treatment for six weeks, then at that stage, or earlier, give the animal a small quantity of good meadow hay.

When the calf is three months old, gradually discontinue the meal, but give the separated milk, to which add a little water, for so long as is convenient. At that stage the calves should be given a little hay, chaff and concentrated food. The best food for calves is undoubtedly oil-linseed cake containing 9 per cent. or even 10 per cent. of oil, and crushed Oats, but both of these foods are almost unobtainable now. In lieu of this fact recourse must be had to some other form of cake, of which there are several on the market. If the calves are having separated milk with their calf meal, one part of cake is sufficient. At four months old in the place of cake and Oats, give them an ample supply of good hay, and at a later stage feed them daily with cut Mangold, just a handful to start with, increasing the quantity as it is seen that no harmful effects as scour result. To the Mangold add a sprinkling of cod liver oil or linseed, or any other approved appetiser.

The time for turning calves out to grass varies according to the time of birth. Many farmers and cowkeepers put them out much too soon, causing them to become "pot bellied" "too extended in stomach. An empty barn or an open shed where it is dry and warm, is much the best place for calves, and certainly until they are eight, or even twelve, months old. As a guide for an early born out, a September calf might at most, be given a grass run in May or June. In any case, it is better to err on the side of retention in the shed especially if the calves can be given green Vetches or Trifolium incarnatum in June and July, to be followed after with Cabbage.

FEEDING DAIRY COWS.

For improving the quality of the cream, and consequently the butter, I am a firm believer in the use of some form of concentrated food. I prefer Bibby's Dairy Cakelettes, which are in nut form, more easily handled, and keep better in bulk, than the cakes at one time made. By the addition of this cake the high colour of the butter is maintained right through the winter, at a time when there is little or no grass, the food being chiefly Mangolds, Cabbage, and Hay. No doubt the Tankard type of Mangold, with its highly coloured flesh, gives colour to the butter as well as possessing much nutriment. Now that the grass is growing freely it will be wise to conserve any concentrated food in hand for next autumn and depend on the natural food for the present. Have a daily ration of 45 lbs. of cut Mangold will be continued until the cows lie out at night, which usually commence in the second week in

May. In addition to the Mangold, an allowance of 5 lbs. of long Hay is given, which is considered to be better than chaffed Hay, as when the latter is used the cows are apt to eat it up too quickly, which from a digestive point of view is not an advantage. In all cases roots should be given *after* milking, to prevent any risk of taint in the milk, the Hay or cake being given before milking. Some give Oat straw in the place of Hay, but I doubt if that compares with good quality meadow Hay, which for cows is superior to field Hay, Sainfoin Clover or Rye grass.—*E. Molyneux.*

MARKETS.

COVENT GARDEN, April 19.

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

	s. d. s. d.		s. d. s. d.
Aloes, per doz.	4 0– 6 0	Cyclamens ...	24 0–24 0
Arafias	7 6– 8 0	Cineranias ...	10 0–12 0
Araucaria excelsa	7 0– 8 0	Erica persoluta ...	36 0–42 0
Asparagus plumosus	10 0–12 0	— Wilmoreana ...	30 0–36 0
— Sprengeri ...	9 0–10 0	Genistas	18 0–24 0
Aspidistra, green...	36 0–42 0	Margueri tes, white	9 0–10 0
Indiana, variegata ...		Mignonette ...	12 0–15 0
Ficus	18 0–24 0		

REMARKS.—Trade is very quiet in the department, but some very fine specimen Hydrangeas, Azalea mollis, and Rhododendrons are being offered.

Ferns and Palms: Average Wholesale Prices.

	s. d. s. d.		s. d. s. d.
Adiantum cuneatum, 48's, per doz.	9 0–10 0	Nephrolepis, in variety, 48's ...	12 0–18 0
elegans ...	9 0–10 0	24's	24 0–36 0
Asplenium, 48's, per doz.	9 0–12 0	Pteris, in variety, 48's	8 0–12 0
— 32's	24 0–24 0	large 60's ...	4 0– 5 0
— nidus, 48's ...	10 0–12 0	small 60's ...	2 0– 3 6
Cyrtomium, 48's ...	8 0–10 0	7½ per truss of	
		15's	2 0– 2 6

Cut Flowers, &c: Average Wholesale Prices.

	s. d. s. d.		s. d. s. d.
Anemone fulgens per doz. bun...	4 0– 5 0	Lily of the Valley, per doz. bun ...	30 0–36 0
Arums—		Narcissus, various, per doz. bun. ...	3 0– 4 0
— (Richardias), per doz. blms	1 0– 6 0	Orchids, per doz.:—	
Azalea, white, per doz. bunches ..	3 0– 6 0	— Cattleyas ...	18 0 —
Camellias, white, per doz. ...	2 6– 3 0	Pelargoniums, double scarlet, per doz. bunches ...	12 0–18 0
Carnations, per doz. — blooms, best American var	2 0– 4 0	Roses, per doz blooms:—	
Croton leaves, per bun ...	1 3– 1 6	— Dorothy Perkins ...	3 0– 5 0
Daffodils (single), per doz. bun — Barri ...	2 0– 3 0	— General Jacqueminot ...	2 0– 2 6
— Emperor ...	3 0– 4 0	— Joseph Lowe ...	4 0– 5 0
— Sir Watkin ...	3 0– 4 0	— Lady Hillingdon ...	3 0– 5 0
— Victoria ...	2 0– 3 0	— Ladylove ...	4 0– 6 0
Eucharis, per doz blooms	3 0– 4 0	— Liberty ...	3 0– 5 0
Gardenias, per box (12's)	6 0– 8 0	— Madame Abel Chatenay ...	3 0– 6 0
(18's)	3 0– 4 0	— Niphetos ...	3 0– 3 0
Heather, white, per doz. bun.	9 0–12 0	— Richmond ...	3 0– 5 0
Lilium longiflorum, long ...	4 0– 5 0	— Sunburst ...	4 0– 6 0
— — rubrum, per doz. long	4 0– 5 0	Sweet Peas, various, per doz. bun. ...	3 0–12 0
— short, per doz blooms ..	2 6– 3 0	Tulips, per doz. — Bloomers ...	3 0– 4 0
		— Darwin, various	3 0– 3 0
		— Single, white ...	3 0– 3 0
		— — Yellow ...	2 0– 2 6
		— Pink ...	3 0– 3 0
		— Red ...	3 0– 3 0
		Violets, per doz. bun.	3 0– 4 0

French Flowers: Average Wholesale Prices.

	s. d. s. d.		s. d. s. d.
Allium, per pad ...	3 0–10 0	Ranunculus, various, per doz. bun ...	6 0– 8 0
Anemones, double, pink, per doz. bun. ...	1 6– 2 0	— single, white ...	1 0– 1 6
— single, mixed ...	2 0– 6 0	Stocks, white, per pad ...	9 0–12 0
Muguet (Convallaria), per bunch ...	0 —	Violets, Parma, per doz. bun. ...	4 0– 5 0

Cut Foliage &c: Average Wholesale Prices.

	s. d. s. d.		s. d. s. d.
Adiantum (Maidenhair Fern), per doz. bun. ...	3 0– 4 0	Ferns, per doz. ...	3 0– 8 0
Asparagus, plumosus, long trails, per bunch ...	4 0– 6 0	Galax, per doz. ...	3 0– 6 0
— sprays, per doz. ...	3 0– 6 0	Smilax, per bunch of trails ...	2 0– 2 6
Myrtle, Cape, per bunch ...	3 0– 4 0	Sprengeri	10 0–15 0

Many of the Flowers and Plants which are normally sent from the Channel Islands are now being sent from the Scilly Isles, and Penzance, which are not so much affected by the present restrictions as those which are nearer to the Continent. The shipments of French flowers are also coming in more regularly. The majority are unsold by the early afternoon, and are being sent on the journey. It is supposed that the supply of these flowers may be stopped altogether before the remainder of the season, owing to transport difficulties. Large consignments from the Channel Islands are now arriving this week in an unsaleable condition, caused by the delay in transit. Hundreds of boxes have to be thrown away, and many more sold at a very low price. There is an abundant supply of Roses. Sweet Peas, both white and coloured, are being offered. There is only a limited supply of Lily of the Valley, of medium quality.

Fruit: Average Wholesale Prices.

	s. d. s. d.		s. d. s. d.
Apples:—		Grapes, per—	
— English, per bus.	30 0–45 0	— Gros Colman, per lb ...	10 0–12 0
— Russets, French, in cases of about 60 to 70 lbs. ...	30 0–36 0	— Black Hamburgh, per lb ...	6 0–10 0
Dates, per box ...	1 7– 1 8	Lemons, per case...	40 0– 48 0
Grapes:—		Oranges, per case	100 0–135 0
— Almeria, per barrel (½ doz. lbs.)	55 0–70 0	Strawberries, forced per lb. ...	10 0–15 0
		Walnuts, kiln dried, per cwt. ...	54 0–105 0

Vegetables: Average Wholesale Prices.

	s. d. s. d.		s. d. s. d.
Artichoke, Chinese (Stachy), per lb.	1 3– 1 6	Mushrooms, per lb.	2 6– 3 0
— Jerusalem, per bushel ...	1 6 —	Mustard and Cress, per doz. punnets	1 6 —
Asparagus (English), per bundle ...	6 0–10 0	Onions, French, per cwt ...	24 0–26 0
— Lamis	5 0– 6 6	— spring, per doz. bun. ...	2 0– 4 0
— National, per bundle ...	16 0–20 0	— Valencia, per case (4 tiers) ...	34 0 —
— (Paris Green), per bundle ...	2 0– 3 6	— — (5 tiers) ...	35 0–37 0
Beans:—		Parsley, per stalk ...	2 0– 2 6
— Broad, per pad	4 0– 7 6	Parsnips, per bag ...	4 0– 5 6
— French (Channel Islands), per lb.	2 6– 3 0	Peas, per lb. ...	2 6– 3 0
Beetroot, per cwt.	5 0– 6 0	Potatoes, new, per lb.	0 7– 0 9
Carrots, new, per doz. bunches ...	3 0– 4 0	Radishes, per doz. bunches ...	1 6– 3 0
— per bag ...	3 0– 4 0	Rhubarb, forced, per doz. ...	1 6– 2 0
Cauliflowers per doz	3 0– 4 0	— natural, per doz.	3 0– 4 0
Cel nac, per doz.	7 0– 8 0	Savoys, per tally ...	1 0 —
Celery, per bundle	1 0– 4 0	Seakale per punnet	1 6– 2 0
Cucumbers, per doz.	7 0–12 0	Shallots, per lb. ...	0 9– 1 0
Endive, per doz ...	3 0– 4 6	Spinach, per bus....	2 6– 4 0
Garlic, per lb. ...	0 8 —	Swedes, per bag ...	2 0– 3 0
Greens, per bag ...	2 0– 3 0	Tomatos per lb. ...	0 6– 0 9
Herbs, per doz bun.	2 0– 4 6	Turnips, per bag ...	3 6– 5 0
Horseradish, per bun.	3 0– 5 0	— new, per bunch	0 6 —
Leeks, per doz. bun.	1 0– 3 0	Turnip tops, per bag	2 0– 3 0
Lettuce, Cabbage, per doz	2 0– —	Vegetable Marrows, per doz. ...	10 0–15 0
Mint, forced, per doz bun	4 0– 6 0	Watercress per doz.	0 8– 0 10

REMARKS.—The Apples now available, long suppose are mostly American and English grapes are in bunches of from 6 lbs. to 10 lbs. each. There are now in the Market Belgian Endive, Cucumbers, Mushrooms, and Watercress. Belgian Endive is a new vegetable to the Market, and is of good quality. Asparagus (English and Continental), Cauliflowers, Mustard and Cress, Radishes, Spring Onions, and Turnip tops are all in good supply. Cauliflowers and Tomatoes are [illegible] *Market, April 19.*

Obituary.

G. H. GREEN.—We regret to announce the death of Mr. G. H. Green, of Fir Tree Hall Gardens, Stubbington, at the age of 60. Deceased went to Enville from the Royal Botanic Gardens, Regent's Park, as lad, as foreman of the conservatory, subsequently to the Forest in England, under the late Mr. Edward Bennett, and ultimately succeeded him as head gardener, a position he occupied for a period of 25 years. On the death of the Countess of Stamford some 15 years ago Mr. Green retired from active service, but was permitted to continue to reside in the gardener's house. The glass houses at Enville contained fine collections of Orchids, stove and greenhouse plants whilst many houses were devoted to the cultivation of fruits. Mr. Green leaves a widow and a large family of high class gardeners. He was survived by two sons, and two daughters. The eldest son is in Canada; another son was for many years manager of Messrs. W. Bull and Sons' seed establishment.

ANDREW ROBESON SARGENT.—We regret to learn from the *Gardeners' Chronicle of America* of the death of Andrew Robeson Sargent, son of Professor Charles S. Sargent, of the Arnold Arboretum. The late Mr. Sargent was a landscape architect, and took to it associated with his father in many of his activities as a naturalist. He was also associated with his brother-in-law, Major Guy Lowell, an architect who attained distinction by his plans for the Boston Art Museum and other important buildings in various parts of the United States. In 1909 the late Mr. Sargent made a journey through Russia, Korea, Java, and other European and Asiatic countries for the purpose of collecting plants.

THE WEATHER.

THE WEATHER IN SCOTLAND

The weather during March was mild, unusually dull and dry. With 16 days of precipitation and 10 rain days there was a total fall of 1.08 inch, the driest day being the 30th, with 0.38 inch. There were 10 sunless days in the month, the 22nd was a sunless day, yielding 9.2 hours of sunshine, the total for the month was 76.5 hours, an average of 2.5 hours per day, and a percentage of 21. The barometric pressure was a mean of 30.1 inches, varied between a highest of 30.47 inches on the 6th and a lowest of 29.15 inches on the 31st. For the month the mean temperature was 41°, the mean maximum being 47.5° and the mean minimum 34.5°, giving a mean range of 13°. On the 24th we had the highest maximum of 60° and on the 1st the lowest minimum of 28°; the lowest maximum of 3[illegible] on the 3rd and 8th, and the highest minimum of 43° on the 21st. On 6 days the temperature fell below 32°. On the grass the mean minimum was 30°, with a lowest of 22° on the 3rd and 13th; there were 16 nights of ground frost. At 1 foot deep the soil temperature fluctuated between 39° and 45°, standing at 42° at the end of the month. The prevailing winds were easterly and westerly. *James Mallock, Scr Andrews Provincial Training College Gardens, Kirkton of Mains, near Dundee.*

GARDENING APPOINTMENT

MR. C. J. **Cradwick**, for the past six years Gardener to Col. F. C. GRANT, Shrubcrne Hall, Shrubcrne, Dorsetshire, as Gardener to Col. Bertram Bob Pitt, Belvedere, Kent.

ANSWERS TO CORRESPONDENTS.

BEES FOR EXAMINATION: *Ipt.* There is no evidence of disease, either in the comb or bees sent. It would appear from your letter that the colony was a weak one. In the comb you submit for examination the brood is perfectly normal, but the presence of much mould seems to point to a leaky roof, and, as you suggest in your query, the stock has not probably been wrapped up warmly enough to maintain the requisite heat of the cluster. The variety is the ordinary English bee.

NAMES OF PLANTS: *East Berks.* Norway Maple (Acer platanoides).—*Delta.* Ranunculus Ficaria (Lesser Celandine).

NURSERY: *L. B.* Keep the bulbs dry until the beginning of July. They should be firmly rooted in the pots, but as you say your bulbs move easily from the top of the soil repot them in July and start them into growth. The Nerine flowers in the autumn, the leaves and flower coming up the same time.

SEAT BED: *E. L.* No doubt Sutton Bed will be more largely grown this season owing to the cost now that its merits as pig food are more widely known. Boiled and mixed with meal the roots form an excellent food for pigs after fattening. They may also be given uncooked to pigs in reasonable quantities and fattening quickly. As food for poultry Sutton Bed is useful when cooked and mixed with meal. The cultivation of the plant is quite simple; it may be grown like garden Beet, except that more space is required, as the foliage is rigorous. The white variety is the more commonly grown.

VINERY WITH EIGHT VINES: *H. T.* You will probably find that although the outside border is well lined, the roots have gone through the wall and extended to the soil beyond. This being so, and the walled in part being not less than 3 feet wide, it would be of little use the end of August to cut a trench and sever any roots which may have extended beyond the confines. Meanwhile, apply superphosphate, and sulphate of ammonia, 1 lb. to the square yard, with a good sprinkling of wood ash or lime, and fork these to the surface. Fork the materials not more than one or two inches below the surface. The application of liquid manure may be repeated at the end of June. If the summer and the position of the border do not supply a light mulching of stable manure, June. A dressing of slaked lime, one foot to the perch, applied in late autumn, would probably be beneficial, but must not be applied at the same time as the previous manure. Blood makes a good manure, but it is offensive in use, and it takes a considerable time to come into action. The best way to employ it is to mix it with soil before it will decompose and be useful to applying to the Vine border in winter or early spring.

Communications Received—J. F. T.—Dr. O. A. H. J. H.—C. D.—A. J. W. L. B. F. W.—J. J.—Pomona R. E.—F. O. E. J. T. P.—S. A.

THE
Gardeners' Chronicle
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ILLUSTRATIONS.

THE ROSARY.

USEFUL ROSES.

I AM so entirely in agreement with the main proposition in the letter of *R. P. S.* (p. 92) as to the difficulty of naming the best Roses for any garden out of one's own district, and have so often stated it myself that, except as a matter of courtesy, it might seem that his letter scarcely calls for a reply, but he raises some interesting questions, as also does *Rosa Rubra*, who writes on the same subject (p. 123).

Varieties of Roses vary greatly in different districts, and even in different gardens. In a garden in the North of Scotland I have seen Richmond making stronger growth than Hugh Dickson, though with me the latter will make shoots 7 feet long, while Richmond, which does well with me, seldom exceeds 4 feet. Moreover, Roses will behave differently in parts of the same garden. I remember Mr Leslie telling me that the beautiful exhibition flowers that have so often brought him victory at exhibitions were invariably cut from a particular part of his garden.

In forming an opinion of the most useful Roses one tries, of course, not to consider one's own garden only, but to bear in mind also the Roses of one's friends. The late Mr. Mawley's adherence to the proposition stated by *R. P. S.* was well known, yet no one, I think, was more assiduous in collecting and collating the views of others on popular varieties.

It was at his instance that year after year, in the *Rose Annual*, we reviewed the opinions of well-known Rose growers on varieties suited for various purposes from a mass of material that he had most carefully collected in elaborate detail from all parts of the country. But, after all, one can only know a Rose by living with it, and that can only be done in one's own garden. In the gardens of our friends we see the Rose at intervals, and more or less cursorily, so that our notice is chiefly attracted by plants which happen to be at their best or worst.

Rosa Rubra and *R. P. S.* are both kind enough to tell us of the varieties which succeed best with them. Both of them include Antoine Rivoire, and seven or eight years ago I should have agreed with them. I still grow a large batch of that variety, which is very charming early in the season, but the summer flowers, by which I mean those of the second crop, produced in August and onwards, are now so poor with me that I conceive it is surpassed by others, possibly Ophelia, and no longer holds a place in the first rank.

On Caroline Testout I think we all agree; for hardiness and general good behaviour it has had few equals, and Hugh Dickson, approved by both your correspondents, is undoubtedly a fine Rose, particularly when pegged down. It is, as Mr Mawley once said, a Rose one can feed proud of. Its failing as a garden Rose is the long shoots of its autumnal growth, which quite spoil any decorative effect in the garden at that period. Lady Hillingdon is placed high by *R. P. S.*, and it is a lovely Rose, with very attractive foliage. I sometimes think that though a Tea variety it prefers a rather more holding soil than my garden can afford it, for though I grow between 40 and 50 plants of this Rose in two borders, and have many pleasing flowers in the course of the season, I fail to get many of the long-standing flowers well set up on stout stems, which are so well shown by Mr Frank Cant and Mr Marriott. Possibly more attention to disbudding might remedy this, but Mr Frank Cant has himself pointed out that a Rose which requires disbudding is somewhat defective as a decorative Rose for the garden.

Rosa Rubra's list is a good one, but it includes three varieties I cannot accept in the first class for garden purposes. Duchess of Wellington is lovely in fine weather; I grow a good bed of it, and would not be without it, but it is most annoying when one is watching it just coming into flower to experience a wet night and find next morning all the outer petals glued together and the flowers worthless. In this country it is a serious defect. Mrs Foley Hobbs is a lovely flower when set up in a box, but it has three serious faults for a garden: (1) It hangs its head; (2) it is too apt to catch cold, especially early in the season, and form flowers with hard, green centres; (3) too many of the flowers as they grow naturally on the plant are, as it were, hidden by the outer petals, and it is only when gathered and placed in a vase or exhibition box with the outer petals pushed back that its beauty of form can be observed.

Juliet is the worst Rose in my garden for black spot, and scarcely flowers after the first bloom is over. Its peculiar colouring is not pleasing to me, but this may be my bad taste.

Finally, I should like to say a word about Papa Gontier. This is almost my ideal of a decorative Rose in many respects, but I gather neither of your correspondents are quite satisfied with it in the open. When I pruned it like other H.T.s I had much the same experience as *R. P. S.*—the plants gradually got weaker, and became useless. Since, however, it has been removed from the beds and planted in a dry border where pruning has practically been confined to the removal of old flower stalks, it has made good growth and persisted year after year. Even better results are obtained from the climbing form on a south wall where pruning is restricted as far as possible. After ten years or so the original plant shows some signs of wearing out, but younger plants will take its place when this occurs.

THE "ROSE ANNUAL."

The National Rose Society has recently issued to its members its *Rose Annual* for 1918. In general character and appearance the volume follows the example of its predecessors except that, doubtless owing to the war, coloured illustrations are absent; it is, however, plentifully illustrated with reproductions of photographs in black and white.

The readable part of the volume (which is prefaced by some reports and accounts which seem rather out of place) begins with a pleasing account, written by the Editor, Mr. Courtney Page, of the Rev. F. Page Roberts, a popular ex-president of the Society, who, after 40 years of Rose growing and showing, is still doing much good work for the Rose. This is followed by a number of articles of considerable interest to rosarians by various writers. It is pleasant to see Mr. George Laing Paul again among the authors; he contributes an article on Rose growing by the sea. The cold winter of 1916-17 has naturally called for notice, and Rose growers will find the present volume quite as interesting as its predecessors. *White Rose*

SPRING FLOWERS.

A YEAR ago I tried in vain to discover from books the botanical difference between Anemone montana and Anemone Pulsatilla. Some authors gave differences in the foliage, but a short examination of herbarium specimens was enough to show that these differences do not exist in nature. Although my plants have grown undisturbed for several years in their present positions and within a few feet of one another, the differences between the two species are, if my memory is correct, much more obvious this year than they have been in former seasons. I should mention that I collected the plants of Anemone montana myself on the upper part of Monte Maggiore above Abbazia in Istria, while my plants of Anemone Pulsatilla are seedlings of the ordinary garden type. Each plant of montana bears from 10 to 30 flower stems, rising to a height of 15 inches, with a tuft of reduced leaves half way up the stem. The stems of Pulsatilla are much shorter and the tuft of leaves is situated almost immediately below the flowers. Moreover, the flowers of montana always droop or, at most, face horizontally, while those of Pulsatilla, when fully developed, are held erect and open very widely. The colour of montana is a very dark purple, and I found no variation in the wild state; that of Pulsatilla is always of a paler mauve-purple, except in the rare chocolate-coloured form, which, by the way, when crossed with pollen of the usual form, gives plants with richly coloured, dark red purple

flowers. In the wild state montana never seemed to produce more than one or two flower-stems, and yet here these same plants produce as many as thirty stems.

How many gardeners grow the real Iris pumila? Not many, it appears, for the plants so labelled are usually forms of I. Chamaeiris. Even the so-called pumila coerulea is probably a hybrid form. In good loam, Iris pumila is capable of forming the most amazing sheets of colour, but in my sandy ground the surface soil has to be constantly enriched and refreshed, or the plants dwindle. The chief interest lies in their early flowering habit, and in the fact that no two seedlings seem to be identical in colour. This year I. pumila was especially precocious, for the first flower opened on March 25, and now, in the middle of April, different seedling forms are coming daily into flower. The purple forms are of every imaginable shade, while others are yellow with greenish or brown markings and some are almost white.

Can anyone, who has ever seen Tulipa Clusiana growing wild, tell us where he saw it? It is a most puzzling plant, for it is said to be wild in Batalinii and the scarlet linifolia are apparently also merely colour forms and not distinct species. As an instance of the baffling characteristics of Tulips, it may be mentioned that a collected bulb of the latter is in flower here now with two yellow and four grey-black anthers.

Tulipa praecox has been especially fine this year with its sturdy stems nearly 24 inches high and its deep red flowers that never lose their shape even in the brightest sunshine. I have been unable to find any variation among these plants, and a marked characteristic is the red purple colour that is always present on the lower part of the stem.

It is a pity that Tulipa saxatilis is not induced to flower more often, for it is unique in its broad, glossy green leaves and in its pale pink flowers with the broad yellow base. The secret of their cultivation seems to lie in giving them a warm position in rich, light soil, and especially in lifting the bulbs annually and in keeping them out of the ground until the renewal of growth shows that the time has come when they must be replanted.—*W. R. Dykes, Charterhouse, Godalming.*

[Photograph by W. Irving.

FIG. 73.—PRIMULA MARVEN.—FLOWERS VIOLET BLUE.

the Département du Gard, in the south of France, and then so far away to the east as Chitral, while there appears to be no doubt that in Tibet there is an almost stemless form, which is at present in flower here, but which is in other respects identical with the typical form.

Moreover, a close study of the habits and form of Clusiana and stellata, when growing side by side, has suggested the possibility that these two Tulips are merely colour forms of the same species. The foliage and the bulbs are indistinguishable; the two plants flower at the same time and the blooms open wide in the sun, with their inner and outer petals held at precisely the same angles in both cases. Clusiana has its outer segments "flamed" with pinkish red, a white inner surface and a deep purple base, while stellata is yellow, with the same external red streaks and no basal blotch. To the latter I attach little importance, because apparently praestans may or may not have black shading at its base, and Fosteriana may or may not have black markings on its yellow base. As far as is known, stellata is only found near the north-west frontier of India, and, if Clusiana is wild in Chitral, it is by no means impossible that the two are merely local colour forms of the same species, in the same way that the pale yellow

THE ALPINE GARDEN.

PRIMULA MARVEN.

PRIMULA MARGINATA and its hybrids comprise a beautiful group of Alpine plants, that, apart from their flowers, are almost worth growing for their charming foliage alone. They are all quite hardy and at home in the rock garden, either planted in a rocky crevice or on a sunny ledge; this species is one of the few Primulas that increase and endure for many years.

The typical plant is a native of the Alps of Dauphiné and Piedmont, and is a very old garden plant, well known for its powdery-grey leaves, which have a wavy, golden margin. There are several beautiful forms in cultivation, two of the best known being the varieties coerulea, with large, pale blue flowers, and densiflora (also known as Dr. Stuart's variety), with smaller, darker-coloured flowers, produced in denser heads rather later than the above. Other garden forms are multiflora and grandiflora, while the best form of all is the variety Mrs. Hall Walker, which has broad, beautifully margined leaves and large lavender-blue flowers with a pale eye.

P. marginata has been used as a parent for hybridising with successful results, and P. Marven, illustrated in fig. 73, is one of the best of these hybrids. It was raised by Mr. R. Lindsay from P. marginata crossed by P. venusta, and combines the characters of the two species. The leaves are grey and powdery, but almost entire in outline, while the violet-blue flowers with white eye are often produced in trusses of a dozen or more. The illustration shows its value as a plant for the Alpine house, but it is quite hardy, and does well in the rock garden. Another hybrid (P. marginata × hirsuta) was raised by Mr. W. Boyd, of Faldonside. It has the powdery-grey leaves of the former with the red flowers of the latter. So far it has not proved amenable to cultivation at Kew. P. marginata and P. Auricula were crossed at the John Innes Institution, Merton, the result being a plant very like the typical P. marginata, with narrow crenate leaves and large lavender-blue flowers in heads on slightly drooping stems. *W. I.*

ORCHID NOTES AND GLEANINGS.

CATTLEYA MENDOZA.

A FLOWER of a very brightly coloured cross between C. Fabia (Dowiana aurea × labiata) and C. Empress Frederick (Dowiana aurea × Mossiae), named C. Mendoza, is sent by Dr. Miguel Lacroze, Bryndir, Rochampton, with whom it is flowering for the first time. The introduction of C. Dowiana aurea twice in the parentage has resulted in improving the shape of the flower, and has given breadth to the petals and broader expansion of the lip. The sepals and petals are bright rosy-mauve, and the lip, which has an undulated margin, is ruby-red, lighter towards the margins and edges of the side lobes. From the base to the centre of the lip a clearly defined series of orange-coloured lines, arranged as in C. Dowiana aurea, increase the bright effect of the colour of the sepals and petals.

LETTERS FROM SOLDIER-GARDENERS.

Sheiks Saad, Mesopotamia.
December 19, 1917.

IT may interest you to hear the results of our summer crops here. They are practically finished now, though a few Tomatos and Brinjals that survived the early frosts are still lingering on. Frost this year set in very early, following the first rains, and was particularly severe, being a record for the past three winters. Unfortunately, about 30,000 lbs. of Tomatos were partly spoiled owing to frost. Climatic conditions during the months of June, July, and August, too, were very much against us; excessive heat—we registered 133° in the shade at this place—and very rough winds did much damage to the tender foliage and flowers of Melons and Cucumbers. However, we succeeded in getting some very good Melons and Cucumbers; the largest Melon weighed 25¼ lbs., and measured 38 by 36 inches, whilst the largest Cucumber weighed 17 lbs. Approximately 84,000 lbs. of Melons, 53,000 lbs. of Cucumbers, 36,500 Bhindi, 25,000 Brinjals, and 37,000 lbs. of Tomatos have been gathered; the total weight to date, including summer and autumn crops, is 426,000 lbs., fruit and vegetables.

Autumn and winter crops are now giving good returns. These are similar to what one finds in most English gardens, such as Turnips, Carrots, Beetroots, Radishes, Lettuces, and Spinach. The last-named is an Arab variety, called by the Arabs "Silij," and is an excellent sort to grow. We have several acres under Cabbage, from which good results are expected later; this year we are trying Sutton's Giant Drumhead and Early Market Cabbages, of which the plants look very promising.

Apart from fruit and vegetable cultivation, one rarely sees anything of interest to the horti-

culturist. The Arab, apparently, does not concern himself in the other departments of horticulture, though in some of their gardens I have seen good Roses, whilst an occasional clump of Hollyhocks makes a welcome change of colour. *Edward Aldridge*

PRUNUS PISSARTII IN FRANCE

THE recent references by your correspondents to the glorious effect produced by Prunus Pissartii, when in full flower, were very interesting to me. In the large garden attached to a hôtel in Caen, which I write there is a fine, naturally grown tree of this species. As near as one can judge it is quite 25 feet high, and it has been wreathed in blossoms from the ground upwards, forming a beautiful pyramid. It has been one of my delights to pay a daily visit to and admire this fine tree, and to watch the busy bees collecting honey and pollen from its thousands of blooms. In a garden in Westmorlandshire I grow this Prunus as standard and as bushes in the shrubberies and woodlands where it flowers sparsely, although beyond an occasional thinning out of the worn-out branches it is left to grow naturally. In the more formal parts of the garden I have it planted in beds for colour effect. These plants are cut down each year in February to one or two eyes. Many of those long, slender, rod-like growths which are the result of such treatment yield generous cultivation at the same time. *Jules Jeffery, R.F.F. France.*

NOTES FROM FRANCE.

EARLY RHODODENDRONS AT VERRIÈRES

A LARGE number of new Rhododendrons were collected by the late M. Philippe de Vilmorin in his gardens at Verrières le Buisson, near Paris. The smaller kinds of the Lepidorhodium section have already flowered. R. hinsecens and R. polylepis among the earliest, R. mouponense and R. spinuliferum showed their buds at the beginning of March, and were unfortunately frozen. R. sutchuenense flowered a little later, the plant was carefully covered with mats every night, and blossomed beautifully at the end of last month. This species is equal to any hybrid, not only because of its flowers, but also because of its sturdy habit and large foliage. The tiny R. intricatum was covered with its very small blue flowers; curiously enough, they have withstood morning frosts which have destroyed those of the other kinds by the end of the month. Later in March R. Keiskei, from Japan, R. rubiginosum and R. floribundum also flowered as well as R. virgatum, which is near R. ciliatum in the shape and colour of its flowers and in its well-developed calyx.

The winter frosts have spoiled the flowering buds of some forms of R. decorum, while others have not suffered. The old R. lacteum has lost a good part of its buds, as in every severe winter, but the plant itself has never suffered any harm from this cause. The fine yellow-flowered R. campylocarpum, which has stood out of doors for many years, has also lost some buds.

CUPRESSUS FORMOSENSIS.

Two young specimens of Cupressus formosensis, planted a few years ago in M. de Vilmorin's arboretum at Verrières le Buisson, near Paris, grew rapidly, promising to be highly decorative and interesting. But the hard winter of 1916-17 has tried them very severely, the tops of many branches having been killed by frost, and the foliage much damaged. The plants, however, revived in the summer, and last winter they did not appear to have suffered. It would seem that this new species is likely to succeed only in mild climates. The swelling of the branches at their junction with the main stem, noted by several writers, has also been observed on the Verrières plants. *S. Mottet.*

TREES AND SHRUBS.

EARLY-FLOWERING SHRUBS IN AN IRISH GARDEN

NEVER have early flowering trees and shrubs been more beautiful here than this season, and judging by the numerous letters in *Gard. Chron.* recently on the subject, this seems to be the case generally in the British Isles.

Mr. Watson, in his interesting remarks on p. 145, calls attention to the extreme beauty of Prunus subhirtella. The illustration in fig. 74 shows a bush of this Prunus in full flower here on March 17. Here it is the most beautiful object in the garden. P. Pissartii also calls for remark, has season has been much earlier in flower here than seems to have been the case in England. I noticed the first blossoms on February 15, and before the end of that month the trees were a beautiful sight, especially one group, which is backed up by a dark Cedar and a Sequoia gigantea. Bullfinches are very fond of the buds of this Prunus, and often attack them before the end of December. Where this lovely Plum fails to flower freely, the cause may more often than not be laid to this destructive bird. Prunus triloba also has been splendid this year, but its flowering was over by the first week in April. A small group of Cerasus Watereri, set in the grass, is the prettiest sight we have here at present (April 8), but the prodigal manner in which this Cherry flowers every year has a dwarfing effect on its growth. Cerasus J. H. Veitch is, on the contrary, growing freely; it is later in flowering than C. Watereri, and this year its branches are thickly studded with flower-buds. Rhododendron arboreum having this season escaped severe spring frosts, which often destroy the whole crop of half-expanded trusses during March, is making a fine display. The huge bushes are masses of glowing colour. A bed of Erica carnea has been a beautiful sight since the middle of January. This is the earliest warm colouring we get here, and it provides a welcome contrast to the yellows and whites which predominate amongst the earliest flowers.

A good effect is created by bushes of Pieris japonica planted amongst the Heaths. This shrub also flowered extra well this season, due no doubt to the very late spring of last year.

FIG. 74.—PRUNUS SUBHIRTELLA IN LORD BESSBOROUGH'S GARDENS, PILTOWN, CO. KILKENNY.

Fig. 74.—PRUNUS SUBHIRTELLA IN LORD BESSBOROUGH'S GARDENS, PILTOWN, CO. KILKENNY.

which kept dormant the tender young growths until all danger of spring frosts was past. These young growths, by the way, give as pretty an effect as another crop of flowers, their reddish bronze colouring being very conspicuous against the dark green of the older foliage. Amelanchier canadensis—the Snowy Mespilus—is at its very best just now, and entirely justifies its popular name. One standard tree in particular, over 17 feet high, is a mass of snow white blossom. Exochorda grandiflora, the Pearl Bush, is flowering remarkably early this season, the milk white racemes being already displayed on one bush in a sheltered corner. Magnolia stellata is past its best, but M. conspicua, thickly studded with flowers, is still a beautiful object. The male form of Skimmia japonica (Fortunei) has been wonder

fully in flower since the end of February. The blooms have a delicious perfume, something like that of Lily-of-the-Valley. A tender shrub, close by, is only now opening its first flowers, but it is bright with last season's berries. So far as can be judged at present, later flowering trees and shrubs will be no less beautiful this season than the earlier ones. *T. E. Tomalin, Bessborough, Kilkenny.*

BULB GARDEN.

GLADIOLUS BYZANTINUS.

FEW Gladioli are sufficiently hardy to withstand an average winter in the North. Of the hardier species and forms there is none known to me so hardy as Gladiolus byzantinus. It is rather hardier than G. communis, which comes next in point of endurance. G. segetum, which I grew for a few years before it succumbed to a hard winter, is next. I consider, but G. armeniacum, sent out as hardy, is not so in the North, as a rule. G. byzantinus lacks the imposing beauty of the hybrids, but is worth growing as a border plant or in the wild garden. The flowers are of a bright red, tinged with violet or magenta, and are often slightly pencilled with white in the interior. The plant grows about 2 or 3 feet high, and succeeds in any good garden soil, but needs a well-drained position. The flowers appear about June or July. *S. Arnott.*

NOTES FROM AMERICA.

AMERICAN RED OAKS.

IN the issue of February 16, p. 65, Dr. Hemsley gave merited praise to the American Red Oaks, especially mentioning Quercus coccinea. Possibly a word from the native woods where these species grow may prove of interest.

We American arboriculturists are very proud of the American Oaks, of which there are many. Dr. Sargent, in *Manual of the Trees of North America*, names 47 species, and this may be considered an abbreviated count. Many of these Oaks have value as ornamental trees, and several of them must be rated as species of high merit. Several of these are locally known as Red Oaks, though Quercus coccinea is almost always called the Scarlet Oak.

The species to which the vernacular name of Red Oak is pre-eminently assigned is Q. rubra. This is a widely distributed tree, ranging from Nova Scotia southward and westward to Virginia and Tennessee, and growing abundantly in most parts of that territory. It is a beautiful tree, and is extensively used in park planting. Further south and west the name Red Oak is given to Q. texana; and another species, distinguished as Q. pagodaefolia, growing in the south-eastern States, sometimes takes the same name.

Practically all the Oaks have showy red foliage after frost, the foliage being retained late into the winter. Several species carry their leaves through the winter, releasing them only when the new buds break in the late spring season. The most brilliant colours usually show on the Pin Oak (Q. palustris) and on the Scarlet Oak (Q. coccinea), but Q. Catesbaei and the Bur Oak (Q. macrocarpa), though displaying duller hues, are equally agreeable to the eye, especially in large masses in the open.

Several of these species are propagated by American nurserymen and widely used by planters and landscape gardeners. The Pin Oak (Q. palustris) has been somewhat extensively planted as a street tree. The Scarlet Oak, Q. coccinea, also makes a good tree for village streets and park avenues. *Frank A. Waugh, Massachusetts Agricultural College, Amherst, Massachusetts, U.S.A.*

The Week's Work.

THE KITCHEN GARDEN.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

POTATOS.—The planting of late varieties of Potatos should be completed as soon as possible. Early Potatos growing in pits or frames should have plenty of air and be protected in severe weather by covering the glass with mats or other suitable material. Very little watering is necessary: moisture is best supplied by removing the lights during a warm, steady rain.

ONIONS.—Onions raised from seed sown and treated as advised in previous calendars should be ready for planting out on ground that has been previously well prepared. Lightly fork the surface soil when the weather is favourable, and sprinkle it with wood ash and a little soot. The plants may be hardened before planting them by removing the lights altogether during fine weather. Make the surface firm, and in planting do not disturb the roots more than is necessary. Allow a space of 15 inches between the rows and 6 inches to 1 foot between the plants in the rows. Plant firmly, and not too deeply; water the roots in dry weather, and syringe the plants overhead for a few days after planting until they are established. Careful attention during the early stages of their growth and subsequent high culture have much influence in increasing the size of the bulbs and the weight of the crop.

SALSIFY AND SCORZONERA. These two root crops require similar treatment to Parsnips. A few rows of each kind may be sown towards the end of the present month in deeply dug ground. These crops may follow Celery; the seed should be sown in drills made 15 inches apart and the seedlings eventually thinned to about 8 inches apart in the rows. In the case of stiff land that has not been deeply worked, holes should be bored as for Parsnips, filling the holes with fine, light soil, and sowing two or three seeds at each station.

SEED-SOWING.—Successional sowings of Broad Beans and Peas should be made, according to the demand, and stakes placed to those sown earlier. Cos Lettuces, Cabbages and Cauliflowers, Scotch and all other Kales, Savoys and all varieties of Broccoli should be sown now. Reserve some of the Savoy seed to make another sowing a fortnight later. Turnips Early Milan and Snowball, Vegetable Marrows, ridge Cucumbers, Spinach and Radishes may also be sown. Lettuces intended to succeed those planted in frames should be planted forthwith. To have a constant supply of young Lettuce plants sow a little seed once a fortnight up to the end of June. Brussels Sprouts sown early require transplanting at 4 inches apart in a sheltered situation.

FRUITS UNDER GLASS.

By W. J. GUISE, Gardener to Mrs DEMPSTER, Keele Hall, Newcastle, Staffordshire.

PLANTING YOUNG VINES.—If the border has been well prepared, and the soil made quite firm, it should not sink, at least to any appreciable extent, and planting may be commenced. The Vines may be breaking into growth, but there need be no fear of injury on that account if the work is carefully carried out. Everything should be in readiness for planting, so that the young fibrous roots will not be exposed to the air for long. Turn the Vines out of their pots, remove the bulk of the soil carefully from the roots, and immerse the latter in a tank of tepid water. The roots will separate quite easily, and should be spread out their full length, in various directions, in shallow holes made for their reception. Place a Bamboo cane to the Vine, and tie it to the lowest wire of the trellis. Cover the roots with fine soil, make it quite firm, and give sufficient tepid water to settle it about the roots. Manure should not be applied as a mulch to newly-planted Vines, but a little clean litter may be placed on the border to prevent rapid evaporation of soil moisture. These young Vines should develop slowly; a night temperature of 55° is suitable for the present, and 65° during the day. Afford ventilation according to the weather conditions, and, although atmospheric moisture is essential, do not make the border too wet.

STRAWBERRIES.—Where the shelves in early and successional fruit houses are filled with Strawberry plants in various stages of growth the work of ventilating and watering should be done with the greatest care, as the Peach and Nectarine trees, or vines if a vinery is used, have to be considered. During bright weather the plants should be examined twice daily for water and the syringe kept in constant use (but not when the flowers are open), as Strawberries are very liable to attacks of red spider. Liquid manure, soot water, and concentrated fertilisers are excellent stimulants for Strawberries, but they should be given in a weak state to plants swelling their berries. Both feeding and syringing should be discontinued directly the fruits commence to colour, at which stage the plants should be removed to a cooler house, where there is plenty of ventilation, and exposed fully to sunshine and air, at the same time reducing the amount of water gradually. The trusses should be propped up with forked sticks to prevent injury to the stalks and fruits. When the later plants have set their fruits, thin the latter to eight or twelve, according to the vigour of the plant. Admit air freely to these successional plants. Late plants plunged in a bed of leaves, ashes, or other moisture-absorbing materials should not be disturbed until they are required for forcing. Remove the lights every morning in mild, showery weather, replacing them before nightfall, and always admitting a little air at night.

THE ORCHID HOUSES.

By J. COLLIER, Gardener to Sir JEREMIAH COLMAN, Bart., Gatton Park, Reigate.

CATTLEYA, LAELIA, AND LAELIO-CATTLEYA.—Laelia pumila (and its many varieties), L. amoena, L. Gravesiae, L.-C. Rubens, L.-C. Clive, L.-C. Cornelia, and L.-C. Epicasta, are becoming active at the roots, and some of the plants may require fresh rooting materials. When repotting, the rooting capacity of each individual plant should be taken into consideration. Some make strong, robust roots, others small and feeble ones, and this fact should guide amateurs as to the size of the pots or pans to be used. The strongest growers should, of course, be afforded the most rooting space. The smaller-growing kinds of the pumila section should be grown in well-drained, shallow pans, and suspended from the roof-rafters in the coolest part of the intermediate house, or the warmest part of the cool house. The stronger-growing hybrids from pumila, such as L.-C. Epicasta and L.-C. Cornelia, should be grown in pots on the stages in an intermediate temperature. The dwarf-growing Laelia monophylla is also developing new roots, and should be top-dressed or repotted where necessary. Well-drained, shallow pans are the best receptacles, and the plants thrive well when suspended from the roof of an intermediate house. L. monophylla is a rather difficult plant to cultivate, and requires to be very carefully watered at all times. It is essential that the roots never be allowed to become very dry, or the small pseudo-bulbs will shrivel. The flower-spikes should be removed from weak plants directly they appear. Many Cattleyas and Laelio-Cattleyas which flower during the late autumn and winter are now commencing fresh root action, and should be re-potted if necessary. These include C. bicolor, C. Leopoldii, C. velutina, and the hybrids C. Iris, C. Adula, C. Atalanta, L.-C. callistoglossa, L.-C. bletchleyensis, and L.-C. Nisa. Plants of Cattleya aurea and C. Warscewiczii are also developing new roots from the base of the last pseudo-bulb, and any that were not repotted in the autumn may be attended to now if necessary. Healthy plants of all the above-named requiring increased rooting space should be afforded larger receptacles, taking care, if the compost is in good condition, not to disturb or injure the roots more than is unavoidable. Where the roots are clinging so firmly to

the sides of the pots that the plants cannot be taken out without damaging them, the pot should be broken and removed in portions. After taking the plant from the pot, cut away the back leafless pseudo-bulbs, leaving two or three behind each leading shoot, for if these useless pseudo-bulbs are allowed to remain they will weaken the plants and necessitate the use of larger pots. Unhealthy plants in sour soil should be taken out of their pots, all decayed roots and useless pseudo-bulbs cut away, and the plants potted up afresh in receptacles only just large enough to hold them. Place them in a shady position in the house, and water with great care. Plants that have sufficient pot room, and are in a satisfactory condition at the roots, may be top-dressed only. Those with long, heavy pseudo-bulbs should be secured firmly to stakes. A suitable compost for these plants is formed of equal parts of Al fibre and Osmunda fibre, broken up rather roughly, a small quantity of Sphagnum moss, and a liberal addition of crushed crocks. Pot firmly and place the compost to within about half an inch of the rim of the pot. Plants of C. Trianæ have passed out of flower, and are starting afresh into growth. They should be dealt with in a similar manner to the plants above mentioned as soon as young roots appear from the base of the new growth.

PLANTS UNDER GLASS.

By E. Harriss, Gardener to Lady Wantage, Lockinge Park, Berkshire.

Codiæum and Dracæna.—In order that Codiæums (Crotons) may develop rich leaf colouring the plants should be grown in a warm house having a moist atmosphere. When well established they may be fully exposed to the sun in a position near the roof glass. Diluted soot-water is an excellent stimulant for both Crotons and Dracænas when the plants are well rooted, and helps to produce intense colour in the leaves. Dracænas require very similar cultural treatment to Crotons, except that they should not be exposed to bright sunshine. A little air may be admitted through the top ventilators during the forenoon on warm days, but the house should be closed early in the afternoon after spraying the plants with rain water.

Sweet Peas in Pots.—Sweet Peas which are being grown in pots or boxes for supplying cut blooms should not be unduly hastened into flower by keeping the atmosphere close. This will weaken the flower-stems and render them unsuitable for decorative work. Plenty of air should be admitted at all times. When the flower-buds appear give the roots stimulants. When in flower do not expose the plants to bright sunshine or the flowers will be scorched.

Euphorbia pulcherrima (Poinsettia).—Cuttings of Poinsettias should be inserted as soon as they are available. Grow the plants in cooler conditions than hitherto for two or three days before taking off the cuttings, which will root more readily if removed from the old plants with a "heel." Place the cuttings in a propagating case with as little delay as possible after they are inserted, to prevent the foliage from flagging, and for the same reason keep them shaded from bright sunshine. Spray the cuttings two or three times daily with lukewarm rain water. A few of the best of the old plants may be cut hard back, and, after partly shaking the old soil from the roots, repotted into 6-inch or 7-inch pots. Two or three shoots may be allowed to develop from these plants. A compost consisting of loam, leaf-mould, manure from a spent Mushroom bed, and sharp sand will form a suitable rooting medium for the final potting.

Eranthemum pulchellum.—The flowers of Eranthemum pulchellum are of a rich, bright blue, and a well grown plant in flower is a very striking object. When the old plants have finished flowering they should be cut back and the roots kept on the dry side for a week or two. After this treatment they will produce plenty of shoots suitable for cuttings if placed in a house having a warm, moist atmosphere. The cuttings may be inserted in small pots filled with a sandy compost, and the pots plunged in a hot bed in a propagating frame. When rooted, pot the plants singly in 3½-inch pots filled with a compost of fibrous loam and peat in equal parts, leaf-mould, and sharp sand. Allow them to grow steadily in a house having a moist, warm atmosphere, in a position near the roof-glass. They will need shifting eventually into 6-inch pots. Some of the old plants may be transferred to larger pots after slightly reducing the ball of roots.

Gloxinia.—Seedling Gloxinias raised from seed sown this year should be pricked out as soon as they are large enough to handle. A compost of loam, peat, leaf-soil and sand passed through a fine sieve is suitable as a rooting medium. Grow the plants on a shelf in a warm, moist house, and shade them from bright sunshine. Shift them, when ready for transference, into 3-inch pots, and again later into 5-inch pots. These plants should flower in August or September. The earliest batch of old plants should soon be showing their flower-buds, and, as they are well rooted, the roots may be given a little stimulant. When the flowers are developing, grow the plants in a cooler and drier house.

THE FLOWER GARDEN.

By R. P. Brotherston, Gardener to the Earl of Haddington, Tyninghame, East Lothian.

Winter Honeysuckles and other Shrubs.—Plants of Winter Honeysuckle should be pruned hard in order to secure strong flowering shoots for next year. Forsythias trained to walls should also be pruned severely, though they do well spur-pruned as objects of colour. They succeed perfectly as bushes, though custom has not as yet made their use in this fashion general. Purple-leaved Plums have been extra profusely flowered, and these too may be pruned, but not so drastically cut as either of the foregoing. Flowering Currants will soon be past, and a little later the knife may be freely used on them. Close pruning causes the production of very healthy shoots, which are covered with flowers in March and the annual pruning serves also to keep the shrub within due bounds. Prunus triloba and P. Davidiana are other early-flowering shrubs which should be extra well attended to at present time, and reduced if trouble is to be avoided, it left alone only to weaken them.

Calceolaria.—Plant Calceolarias now that cool days may be established before the hot sunshine of May tries them. Except in very warm districts the more tender *C. amplexicaulis* should not be planted until about the middle of May, and in cold districts not till later still. In very dry soils a mulch of rotten manure or of short grass helps to keep the soil about the roots cool and moist, which is necessary for Calceolarias to succeed.

Hydrangea.—Hydrangeas growing in tubs may be put out of doors in a sheltered spot. Long established plants which it is known have an abundance of roots will need plenty of water and liquid manure on frequent occasions, as well as slight surface dressings rich in manure. If the plants were not pruned earlier, the weak growths should be cut back or removed altogether. It is sometimes necessary to disbud the stronger shoots where it is observed that there is not space for all to mature their flower-heads.

Agapanthus umbellatus.—Plants of Agapanthus umbellatus in tubs need no longer be kept under glass. They are abundant root producers, and are all the better for being turned out of the tubs or boxes in which they are established, the ball reduced along with the roots, and restored to their receptacles. But this work is best done in the autumn. Just at present water may be given with much caution until new growth develops, when the profuse application of manure water is good for them. There are two forms of this plant, one producing flower-heads many times larger than the common form, the white variety being also larger, but not to the same degree. They are easy to reproduce from seeds, which are best sown as soon as they are ripe and the seedlings grown rapidly on by frequent re-pottings. I also grow them in flower borders, but as a rule do not replant them until the flower-heads begin to push. In an airy structure they usually require no water till the above stage is reached, and, once re-established in the soil, no further attention is needed all the summer.

THE HARDY FRUIT GARDEN.

By Jas Hudson, Head Gardener at Gunnersbury House, Acton, W.

Regrafting Old Trees.—The grafting of old fruit trees may still be done where the growths are not too much advanced. The present is the best time to regraft trees on walls that face east or north. No time should be lost in taking off the scions if this has not yet been done. Select a suitable day for the work and do it as expeditiously as possible.

Trees Tied to Stakes.—Before the season is far advanced make an examination of the trees tied to stakes. The stake may be solid and secure in the ground, and the tie also satisfactory, but the string may be cutting the wood and need renewing. Short pieces of old rubber hose placed between the stake and the tree are useful in preventing damage to the bark.

THE APIARY.

By Chloris

Feeding Bees.—With the great shortage of sugar, it is difficult to advise how best to meet the situation, for, let it be remembered, more bees die of starvation during April and May than during any months of the year. When bees are found dead in the hives with heads deep in the cells, their death is due to lack of food; yet there may be much sealed stores in the frames on the outside of the brood nest. The young beekeeper sees the bees working merrily, carrying in pollen, and thinks, in consequence, that all is well with the colony, but he is deceived. Every day larger and larger quantities of brood are hatching, and there are more mouths to feed, and though there may be much pollen, few nectar yielding flowers are to be found. Where syrup feeding is possible, make it thin and feed slowly, not in advance of the daily wants of the colony, because cells are needed to raise brood in and not for storing food in the brood chamber. Always give warm syrup, and wrap up the feeder warmly so that the contents of the bottle may remain warm, and thus help to maintain a good temperature in the brood chamber during such inclement weather as we have experienced during the opening days of the present month. If stored food can be got from other hives, brushe the cappings of a portion of the frame and place the frame next the brood. Some beekeepers are using pink candy, adding ½ lb. of candy to ½ pint of boiling water.

Water.—The time of the year has arrived when bees require large quantities of water to raise brood successfully. Unfortunately, bees may get moisture from a contaminated source. Not long ago I saw a large quantity of bees taking their supply from the liquid around a manure heap. A friend of mine saw a hint in a paper which I thought was very good, and he had found it excellent. Take a bowl of water, on it drop some melted wax; these thin cakes or, rather, flakes of wax make excellent floats on which the bees can rest to take in a supply. Last year I advocated a raised sheet of glass to be placed over the water to protect it from the infected faeces of the bees, for "Isle of Wight" disease is often spread by this means. Further, the warmed water causes the scent of the wax to rise, and this draws the bees to the drinking place.

Fitting-up Sections.—The supply of wood for making sections is limited, and all will not be able to get sections. Where they can be procured they should be fitted up in readiness for the time of fruit blossoming. A crate usually holds 21 sections. Wet the folding joints on both sides with a brush dipped in boiling water, making a pile of the whole. When all are wetted, invert the pile, and commence folding the first soaked section. When this plan is adopted no joint will break rather than bend, as is so often the case when the wood is folded dry. It will be found best to use full sheets of foundation, for preference that which is thinnest and having a worker base. When foundation with a drone base is used for this purpose, the sealed sections never look so pleasing. As well filled sections this year should not be sold for less than 2s. 10d. to 3s. as minimum price, it will pay to take a little extra trouble with them.

EDITORIAL NOTICE.

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

Editors and Publisher.—*Our correspondents would obviate delay in obtaining answers to their communications and save us much time and trouble, if they would kindly observe the notice printed acrib 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 as 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.*

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

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

APPOINTMENT FOR THE ENSUING WEEK.

TUESDAY, APRIL 23—
Roy. Hort. Soc. Comms. meet. National Auricula and Prim. Soc. Annual Exhibition

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 48·6

ACTUAL TEMPERATURE:—
Gardeners' Chronicle office, 41, Wellington Street, Covent Garden, London, *Thursday*, April 18: 10 A.M., Bar. 30·1, temp. 45·5, Weather, Rainy

Bees and Fruit Production.

Expert opinion is divided on the subject of the importance of the honey bee as an agent of pollination of fruit trees. No one, of course, denies that the honey bee does visit fruit blossoms and play a part in pollination, but the extent to which it makes any difference to the fruit crop is by no means a matter of general agreement. The experiments* carried out by Mr. A. H. Hendrickson in California are therefore of considerable interest and value.

In the course of these experiments Plums of two varieties, French or Agen and Imperial, were closely studied, and careful records were kept of the fruit set under ordinary orchard conditions, in orchards well supplied with hives, and also in trees the insect visits to which were controlled by enclosing them in insect-proof mosquito netting, which enabled the experimenter in some cases to exclude all insects from the trees, and in others to introduce under the netting hives of honey bees. These experiments were supplemented by tests on the effect—as measured by the crop—of installing hives in a number of privately owned orchards.

The results of these experiments were a triumphant vindication of those who maintain that the honey bee is an active and important agent of pollination, and hence of fruit production.

In the case of Imperial, when all insects were excluded, the percentage of fruit set (to blossom formed) was 0.34—*i.e.*, about one in every 300 flowers set fruit.

In the open orchard 7.2 per cent. of blossom produced fruit. A tree of this variety enclosed with bees and a French tree within a mosquito net set 7.9, whereas when it was enclosed with bees alone and without a French tree companion it set only 3.02 per cent.

Evidently this variety (Imperial) is in a measure self-sterile, or, rather, only self fertile to a limited extent, and to this is to be ascribed the facts that in the open and in the enclosure, in both of which cases another variety of Plum was available for pollination purposes, the set of fruit was far higher than when pollen from another variety was excluded, and this in spite of the fact that bees were present.

In the case of the French (Agen) Plum, the set under average orchard conditions with bees in the vicinity—was 13.2 per cent.; when all insects were excluded it fell to 0.43 per cent. For one tree enclosed with bees under netting it rose to 19 per cent. Here, with a manifestly self-fertile variety, the effect of the bees on pollination is very evident indeed; amounting to one-third as much again as the set in the open. Similar results were obtained by introducing bees into orchards. In one case the owner found that his Jefferson Plum orchard, which had never before borne fair crops, produced a heavy crop when hives were installed in the orchard.

That there is safety in numbers is indicated by the fact that in the experimental orchard, whereas in 1916, with six colonies of bees to 180 acres, there was an average set of 3.6; in 1917, with 115 colonies of bees, the set was 13.2 per cent.—nearly a fourfold increase. A point which will naturally suggest itself to the orchardist is that no reference is contained in the Bulletin to other insect agents of pollination. But, after all, although we could have wished for evidence on this head, the important fact is that the honey bee is an invaluable fruit-producer; and a particularly fruitful friend of the grower in those years when flowers are not plentiful or when wild bees are scarce.

Finally, these experiments are of great interest in another direction. Artificial pollination tests had indicated that the variety Imperial is self-sterile, and yet, as we have already seen, this variety when enclosed with bees under mosquito netting set fruit to the extent of 3.02 per cent. of blossom produced. Evidently, therefore, either self-sterility is a variable phenomenon—apparent in one season and not in another—or bees are better manipulators of pollination experiments than are human beings, and indeed the delicate persistence of the bee may well make it a better agent of pollination than the average heavy-handed human being. But, on the other hand, evidence exists in the case of Apples indicating that self-sterility may be not absolute, but dependent on the season or state of the tree, certain Apples appearing to be self-sterile three years out of five and self-fertile in the other two.

It is to be hoped that, at all events in those districts from which Isle of Wight disease is absent, fruit growers will install or increase the number of their hives, for at the present time every means of increasing supplies of fruit need to be taken.

* *The Common Honey Bee as an Agent in Pomal Pollination.* By A. H. Hendrickson. Bulletin 291, University of California publications, 1918.

ROYAL HORTICULTURAL SOCIETY'S MEETINGS.—It having been represented to the President and Council of the Royal Horticultural Society that altered railway services render it necessary for exhibitors to commence packing at 5.30 p.m. in order to secure their evening trains home, consent has been given them to commence packing their exhibits at that time, and the meetings will be closed at 5.30 p.m. until further notice.

FLOWERS IN SEASON.—We have received choice blooms of Rose Maréchal Niel from Mr. J. BATES, Meaford Gardens, Stone, Staffordshire. The blooms were gathered from a tree which has occupied its present position, in a late Peach house, for forty-seven years. The trunk is 15 feet high, with a girth of 5 inches.

NATIONAL FRUIT GROWERS' FEDERATION.—The Fruit Growers' Conference, which took place in February last at the London Guildhall, decided to constitute a committee for the purpose of carrying into effect the resolutions agreed to. The first meeting of the committee took place on Friday, the 12th inst., at the Tavistock Hotel, Covent Garden. There were present: Alderman MOORE, Mr. STANLEY MACHIN (representing the Fruiterers' Company), Col. HONEYBALL, Mr. G. W. LEAK (official representative of the National Fruit Growers' Federation), Mr. DUNCOMBE GIBBS (secretary of the Federation), and numerous delegates from the Associations affiliated to the Federation. Alderman MOORE was elected chairman. It was decided to invite the National Farmers' Union (Fruit Section) to nominate two representatives. The secretaryship was offered to Mr. DUNCOMBE GIBBS, but he was unable to accept the post owing to pressure of work, and Mr. W. P. SEABROOK was appointed. Various sub-committees were appointed to deal with the subjects upon which resolutions were passed at the Conference. The Advisory Committee to the Board of Agriculture was constituted as follows: Messrs. G. F. GLENNY (Wisbech), W. COLTHUP (Kent), L. OAKES (Pershore), W. G. LORIOT (Middlesex), A. MARSHALL (Guernsey), E. S. WARWICK (Swanwick), with Mr. STANLEY MACHIN. The sub-committee to deal with the question of pulping and drying, bottling and canning factories, is composed entirely of West Midland growers: Messrs. HOPWOOD, WHITTLEY, DUNCOMBE GIBBS (Pershore), and Mr. F. MAY (Cheltenham). The committee is to be known as "The Guildhall Conference Committee" (being a Joint Committee of the Worshipful Company of Fruiterers and the National Fruit Growers' Federation).

FLUE DUST AS A FERTILISER.—The fact that flue dust from blast furnaces contains potash, and is of great value as a fertiliser, has led many people to suppose that flue dust obtained from destructors, boilers, and factory furnaces would also be of value for application to the soil. This, according to information on the subject given in Leaflet No. 23, issued by the Board of Agriculture, is not the case.

PRICES FOR ONIONS.—The attention of growers of Onions is drawn by the Food Production Department to the following announcement with respect to the 1918 crop: "In view of high freights and restrictions in shipping it is extremely important that the home production of Onions should be increased very largely and up to the fullest extent which the supply of seed will allow. In the notice issued by the Department on March 7 it was stated that the Ministry of Food had fixed prices for Onions. The statement should have read as follows: The Ministry of Food announces that in the event of its becoming necessary to fix any maximum growers' prices for the British Onion crop of 1918, the prices will not be less than those indicated in the following scale":—Early autumn (up to November 1), £15, f.o.r., f.o.b.:

late autumn (November 1 to January 1), £16 10s., f.o.r., f.o.b.; winter and spring (after January 1), £18, f.o.r., f.o.b.

Potatos (Corky Scab) Suspension Order of 1918.—By a recent Order issued by the Board of Agriculture "the operation of the Potatos (Corky Scab) Order of 1914 is suspended until such date as the Board of Agriculture and Fisheries shall by Order direct: provided that such suspension shall not [illegible] affect the previous operation of the Order hereby suspended or anything duly done or suffered under that Order, or [illegible] affect any right, privilege, obligation or liability acquired, accrued, or incurred under that Order, or [illegible] affect any penalty incurred in respect of any offence committed against that Order, or [illegible] affect any investigation, legal proceeding or remedy in respect of any such right, privilege, obligation, liability, or penalty as aforesaid; and any such investigation, legal proceeding or remedy may be instituted, continued or enforced, and any such penalty may be imposed as if this Order had not been made." Thus, after being a notifiable [illegible] for three years, Corky Scab (Spongospora subterranea) [illegible] be left to itself. This will make very little difference, as the Order has [illegible] been [illegible] administered [illegible] [illegible] W[illegible] D[illegible] [illegible] Board of Agriculture and Fisheries [illegible] to find out the geographical distribution of this disease. At the time the Order was issued the American Government [illegible] bility of the introduction of [illegible] disease into the States, where, however, [illegible] existed. They had forbidden the [illegible] of Potatos owing to Wart Disease [illegible] effort was made to get them to [illegible] if the Potatos were accompanied by a certificate such as is accepted by the South African Department to the effect that the Potatos were free from Wart Disease and had been grown at least five miles from the [illegible] Order [illegible] Board [illegible] [illegible] finding out the [illegible] of a diseased [illegible] Spongospora [illegible] Corky Scab [illegible] of the tuber [illegible] characters [illegible] distinct cavities filled with [illegible] brown mass of dust and spore balls [illegible] tubers [illegible] attacked, and occasionally when the fungus starts from several centres and has worked into the tubers from different points, the unaffected part between may stand out like warts, giving a remarkable resemblance to Wart Disease. Many alarming statements have been made as to the virulence of the disease, and so far no remedy has been found, nor is any variety known to be immune. Lime, the cure-all of the gardener, only increases the disease. There is no doubt that this disease can do much damage, and in some parts it is as bad as Wart Disease, worse when it is considered that there are no immune varieties. Fortunately, such cases are the exception, and while the disease is generally distributed throughout the British Isles it is usually only found to be dangerous in damp localities, and if the land is drained the disease will disappear. Corky Scab disease is not infrequent in seed tubers, but such seed seldom seems to perpetuate the disease in ordinary soil. It may be added that this season a large proportion of seed Potatos from Scotland is scabby, the tubers having the general appearance of Corky Scab, but the examination of a large number of samples has only revealed one or two cases of the disease.

ARENGA SACCHARIFERA.

Arenga saccharifera, the Sugar Palm, grows wild in Malaya, and is largely cultivated in India for its sugar, sago, and fibre. It has a very stout trunk, large, pinnate leaves, and tail-like clusters of flower stems about 5 feet long. In favourable conditions the tree comes into flower when about ten years old, the flowering period extending over about two years, after which the tree dies. By cutting off the inflorescence whilst it is young, a great quantity of sap is collected from the wound, a tree being said to yield as much as three quarts a day for about two years. When fresh the sap is clear, pleasant in taste, and is a refreshing drink generally appreciated by the natives. Kept for a little while it becomes turbid and acid, and with fermentation acquires an intoxicating quality. It is sometimes flavoured with the bark of certain trees, and in this state large quantities of the liquor are consumed. Sugar is also made from the sap, sago is extracted from the interior of the stem, a tree being reckoned to yield about 150 lbs. of sago meal, and the black, horsehair-like fibre produced round the base of the leaf-stalks, as well as that extracted from the leaf itself, has a commercial value. The genus contains about ten species, all natives of the East. They are tall, stout Palms with ringed, scarred trunks and large, pinnate leaves, the pinnae of which are narrow, with a truncated or praemorse apex and curiously lobed base, this latter character distinguishing Arenga from Didymosperma (Wallichia). Male and female flowers are usually produced in separate spadices on the same tree, otherwise the inflorescences are arranged in threes on the same spadix, a female between two males. The flowers are usually purple. The fruit is globose, fleshy, and contains two or three seeds, about an inch long, oblong, slightly angular or compressed.

Fig. 75.—Arenga saccharifera, the Sugar Palm, in flower.

ON INCREASED FOOD PRODUCTION.

LEEKS.

IN reply to *G. H. H. W.* (p. 156), my article on Leeks was intended for those who wish to have this vegetable during the autumn and winter, and I venture to say that the produce of one well-grown row would equal that of five or six rows grown as *G. H. H. W.* suggests. Surely we cannot put our heated greenhouses and frames to better purpose than forwarding vegetables for use during the ensuing season—indeed, we are urged to do so. *G. H. H. W.* says: "The Leek requires good cultivation, but there is no need for coddling the plant." I agree with him, but during the early months of the year the plants must be protected if good produce is required. *R. W. Thatcher.*

—— Mr. Thatcher's advice on p. 104 is excellent, where there is the labour to carry it out. Mr. Turner (p. 154) advises sowing out-of-doors in the autumn and transplanting in the spring, which is an excellent method. Mr. Scarlett (p. 153) says: "To plant Leeks in holes 8 or 9 inches deep is utter folly." I disagree with him. The method followed in these gardens is as follows: The Leeks are sown out-of-doors about the end of March, and left in the seed-bed until they are ready for transplanting, when holes are made in previously prepared ground about 12 inches deep and 2½ inches in diameter. The Leeks are then simply dropped in the holes and watered, no soil being added, the subsequent treatment being the same as advocated by *G. H. H. W.* (p. 136). By this method labour is reduced to a minimum, as earthing up is not required. Between two and three thousand Leeks are grown annually in these gardens, and the plants would do credit to any exhibition. A large number had stems from 10 to 12 inches in length, perfectly bleached and with a diameter of 3 inches; a few were 14 inches in length. *G. H. Shoubridge, Burton Gardens, Devon.*

FRENCH BEANS IN COLD FRAMES.

ONE of the best methods of producing French Beans at their best is to sow two seeds at once in each 60-sized pot, raise the plants in heat, harden them off in a cool house, and finally plant them singly in properly prepared cold frames, in rows 20 to 24 inches apart and 10 to 12 inches from plant to plant. About 15 inches of soil should be placed on the top of 4 inches of decayed manure, and the plants set about 15 to 18 inches from the glass. A ridge of finely sifted cinder ashes placed around the inside of the frame will ward off slugs.

Syringe the plants freely on fine days and cover the lights at night when the weather is cold. Place a stick to each plant and pinch out the point of the shoot immediately it is seen above the seed leaves.

Heavy crops may be had in this way much in advance of those sown in the open, and of much superior quality. We adopt this system both for early crops and also for late supplies in autumn. Nothing is gained by crowding the plants. When in full bearing, liberal supplies of water and liquid manure should be given to the roots, and the foliage kept well syringed with tepid water on fine days, to ward off attacks of red spider. We rely on the two varieties Canadian Wonder and Ne Plus Ultra for frame cultivation. *E. Beckett.*

ALLOTMENTS AT CHESTER.

WITH a view to stimulating allotment holders to produce the maximum amount of food from their allotments, the Chester Paxton Society has offered prizes and cultural certificates for the best kept and heaviest cropped allotments in the district. A panel of practical gardeners, who are members of the society, has been formed for the purpose of giving practical advice to local allotment holders.

HOME CORRESPONDENCE.

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

FEEDING PIGS FROM SMALL GARDENS (see p. 150).—When I spoke of boarding the floor of a pig-sty, it was merely to point out one method whereby a sty may be kept clean in spite of dung, urine, and any propensity for grubbing. Our pig houses were mostly built of stone, and paved with water-polished pebbles. A wooden house, or even a large hogshead wooden barrel could serve as a sty for a small pig or two. Old herring boats, turned upside down, were used by some. Paving a sty could not be considered cruelty to the pig. We never ringed their noses, nor pared off the rim of the snout to prevent grubbing, as I have seen pigs treated in Surrey. I quite agree with Mr. Jenkins (p. 150) that young pigs that are well fed give no trouble by grubbing. In my young days we had several big breeding sows, as well as a boar, always on the premises. One cannot gauge the antics of these big animals, as the old instinct will arise at various periods of their career. Breeding sows should not be too highly fed after the young brood or litter has been weaned; nor should they be made too fat just before they litter. *J. F.*

—— From the remarks (p. 150) by *J. F.* I am convinced that he was not writing on present-day opportunities, but was thinking of times gone by. Such writings are misleading to present day would-be keepers of pigs, and thus my note, p. 141. We have to adapt ourselves to producing food quite of a different kind to that of thirty years ago, and under different circumstances. As a farmer I know the value of pigs and pig food. *E. Molyneux.*

THE SEED OUTLOOK.—The Seeds Advisory Committee of this Department is agreed that this country will be well advised to follow the example of the United States in reducing, as far as possible, the number of varieties of seeds which the trade has hitherto handled. In view of the considerable increase in the demand for seeds of food crops, both in the United Kingdom and in other seed-growing countries, and of the difficulties under which all seed-growers are at present working owing to the shortage of labour, it seems desirable to concentrate on those food crop seeds which are of outstanding importance and for which the demand is large and steady. Not only will a temporary reduction in the number of varieties on sale simplify field work in planting, harvesting, and in the care which has to be taken to isolate properly in order to avoid crossing, but it will reduce office work at a time when the demands upon man-power are so insistent. The Department will be glad, therefore, if seedsmen, when arranging contracts for seed for next season, will cut down their requirements to staple varieties and avoid asking for fancy sorts to be grown. The most urgent need of our country at present is that an adequate supply of food should be provided, and the Department feels confident that seedsmen will willingly co-operate in meeting this essential need by concentrating their efforts on the distribution of seeds of only those varieties which really matter and leaving the fancy sorts for happier times. *Lawrence Weaver, Controller of Supplies, Food Production Department, 72, Victoria Street, London, S.W. 1.*

SCARCITY OF PEAR BLOOM.—The fruit prospects this year so far as bloom is concerned are most promising in this locality, with the one exception of Pears. I never remember seeing less bloom on Pear trees, which is partly accounted for by the heavy crops last season, but not entirely, as many trees which carried very few fruits last year, and were due to fruit heavily this, are equally bare of bloom. In these gardens the only Pear trees which give a fair promise for fruiting are two that were newly planted fifteen months ago. It will be interesting to learn from other correspondents in various parts of the country what are their prospects with regard to Pears. It is surprising to see the wealth of bloom on nearly every Plum and Damson tree, even in the case of those that were borne down with fruit last year. *Edwin Beckett, Aldenham House Gardens, Elstree, Hertfordshire.*

THE WEATHER AND GHENT QUINQUENNIAL, 1903.—The keen wind and snow of the present week call to mind vividly the weather of the same time in April, 1903, which resulted in the destruction of large quantities of fruit crops all over Europe. The sea was very rough crossing to the Ghent Quinquennial Exhibition, but there was no indication of the severe weather to follow; indeed, the fine bed of Norma Hyacinths in the hotel courtyard at Ghent was perfect at night. In the morning they were under snow. The weather got colder, and the British members of the jury, waiting in evening dress to receive King Leopold, who at last arrived with his escort covered with snow, could heartily endorse His Majesty's remark to Count Oswald de Kerchove on entering the building: "My dear Count, you are indeed a magician—by your agency I have passed in a moment from the rigours of the North Pole to the splendours of the tropics" (See *Gard. Chron.*, April 25, 1903, p. 264.) *J. O'Brien.*

JERUSALEM ARTICHOKE.—A call has been made to suggest an English name for this vegetable. But can we do better than adopt the somewhat universal name, "Topinambour," which could hardly be confused with any other name. Vilmorin gives the following list of synonyms: A. du Canada, A. de Jerusalem, A. de terre, Crompire, Poire de terre, Soleil vivace, Tertiffe, Topinamboux. English, Jerusalem Artichoke; German, Erdapfel, Erdbirne; (in Austria, I think, Topinambour); Flemish, Aardpeer; Danish, Jordskokken; Swedish, Jordarts koche; Italian, Girasole del Canada, Tartufoli; Spanish, Namara, Pataca; Portuguese, Topinambor. Batata Cravalha; Russian, Topinambour; Polish, Topinambur. Another use for "Artichaux de Jerusalem" in France is for the squash or custard marrows (Patisson), and guests sometimes look incredulous when we tell them that they are eating Jerusalem Artichokes served in this manner. *H. E. D.*

—— Mr. Vicary Gibbs disbelieves in the derivation of this name from the Italian "Girasole." That the Helianthus which produces the tubers in question is known in Italy, like all other Sunflowers, by the name of "Girasole," "Turn as the sun," there is no doubt whatever. The white tuber itself is known by local names in different parts of Italy, but I have commonly heard it called "Topinamburo" by gardeners in Southern Italy. I agree, however, that it could never have come to England from Italy as "Girasole Artiocco." In the first place, there is no such word as "artiocco." The dictionaries give "artichiocco" as being occasionally heard, instead of the universal term for the Globe Artichoke, which is "Carciofo." Furthermore, Italians, even the most ignorant, never compare a Helianthus with a Cynara. The latter is far commoner than in England; in fact it is a staple Italian vegetable, and in the drier parts of the South its wild form infests ill-cultivated fields and ornaments them with its magnificent purple blooms. I will make enquiry, and let you have authoritative information as to the use of "Girasole" for the Helianthus tuber. *Charles Lacaita, 13, Chester Square, S.W.*

—— In the issue for April 6 Mr. J. Murison replies to my letter to you on p. 140 on this subject. It is a pity that he did not do me the honour of carefully reading my letter before replying—he would not then have misquoted me as he does. He writes: "Your correspondent also states that 'girasole' has never been used by Italians. This is not correct." Of course I never said anything of the kind; I said: "I doubt if any evidence can be produced that Italians have ever called *this vegetable* 'girasole'"—a very different proposition. Etymology is a matter for historical investigation, not for ingenious guessing. What is wanted is evidence that when this plant was first introduced from America some 200 or more years ago it came to England by a roundabout route through Italy, and was introduced to us by Italians under the name "girasole." A Plant Dictionary, published 1870, giving the name "girasole tuberoso," as quoted by Mr. Murison, is valueless for this purpose. *Vicary Gibbs.*

SOCIETIES.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

MARCH 21.—*Committee present:* Rev. J. Crombleholme (in the chair), Messrs R. Ashworth, D. A. Cowan, J. Cypher, A. G. Ellwood, J. Howes, A. J. Keeling, J. Lupton, D. McLeod, J. McNab, W. Shackleton, H. Thorp, and H. Arthur (secretary).

AWARDS.

FIRST-CLASS CERTIFICATES.

Cattleya Brenda nobilior, *Brasso-Cattleya Leeana* (*B.-C. Lady Wigan* × *Thorntonii*), and *Odontoglossum Samuel Gratrix*, from S. GRATRIX, Esq.

Odontioda Evansiæ, from R. ASHWORTH, Esq.

Dendrobium nobile King George, from H. H. BOLTON, Esq.

Cattleya Clotha Leeana Triumph Grand Monarch × *Enid Majestic*, a Silver Medal was also awarded, from W. R. LEE, Esq.

AWARDS OF MERIT.

Dendrobium chrysotoxum Percy Ashworth, *D. Lady Colman West Point var.*, *Cattleya Enid Gratrixiæ*, and *Odontoglossum Windsor*, from S. GRATRIX, Esq.

Odontioda crispo Harrysonii Georgius Rex, from R. ASHWORTH, Esq.

Laelia-Cattleya Eunice alba (*L. anceps alba* × *C. chocoensis alba*), from Messrs. J. AND A. MCBEAN.

APRIL 4.—*Committee present:* Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, D. A. Cowan, J. Cypher, A. G. Ellwood, J. Howes, A. J. Keeling, D. McLeod, J. McNab, W. Shackleton, H. Thorpe, and H. Arthur (secretary).

AWARDS.

FIRST-CLASS CERTIFICATES.

Laelio-Cattleya West Point Pet (*L. C. Hletchi leycesiana* × *C. Empress Fredericki*), *Brasso-Cattleya Apollo Enigma*, *Cattleya Interstella alba magnifica*, *Odontioda Red Cross*, *O. Exquisita*, and *O. Coronation West Point var.*, from S. GRATRIX, Esq.

Odontioda Miss Ada Bradshawiæ × *Odontioda*), flower with brilliant crimson markings, from F. SMITH, Esq.

AWARDS OF MERIT.

Odontoglossum crispum Lord Morley, *O. Excoriator*, *Lycaste Skinneri Fairy Gem*, from S. GRATRIX, Esq.

Laelio-Cattleya Mrs. Temple Ashland's var. (*Brasso-Cattleya Joan* (*B.-C. Mary Gratrix* × *C. Octave Doin*), and *Brasso-Cattleya Langleyensis Warburtonii*, from R. ASHWORTH, Esq.

Odontioda Brewii Highfield var., from Mr. W. SHACKLETON.

NATIONAL CHRYSANTHEMUM.

APRIL 15.—A meeting of the executive committee of the National Chrysanthemum Society was held on this date at Carr's Restaurant, Strand, Mr. D. B. Crane presiding. The schedule for the current year was submitted, and is, in the main, the same as that for last year.

A proposition that the Society should join with the Finchley Chrysanthemum Society in holding an early flowering Chrysanthemum display on September 23 next, in conjunction with that society's autumn exhibition, was agreed to. It was proposed to give prizes in classes for seven vases of blooms, three vases of blooms, seven vases of disbudded blooms, and three vases of disbudded blooms respectively. Three prizes will be given in each class.

The members of the Floral Committee will meet on the same occasion.

UNITED HORTICULTURAL BENEFIT AND PROVIDENT.

APRIL 8.—The monthly meeting of this Society was held at the R.H.S. Hall, on Monday, the 8th inst., Mr. Chas. H. Curtis presiding.

Five new members were elected. Five members were allowed to withdraw interest amounting to £13 11s. 10d., and three members over the age of 70 years withdrew from their deposits sums amounting to £114 18s. 4d.

The sick pay on the private side amounted to £31 4s. 7d., and the State section £18 5s. 10d., and maternity claims to £6.

The trustees stated that they had invested a further sum of £500 in War Bonds and the Committee empowered them to invest a further £300 before the next meeting.

CROPS AND STOCK ON THE HOME FARM.

EWES AND LAMBS.

TAKEN as a whole, sheep of the Hampshire Down breed have done very well in their lambing season. It is perhaps the most popular of all breeds for close folding—which is the main point to consider on an arable farm, where so much depends upon the sheep dressing the land to ensure satisfactory corn, hay and root crops. The weather has, on the whole, been favourable, especially during January and February, which are usually the most important months for lambing. There is a fair proportion of twin lambs; in fact, quite enough, considering the scarcity of cake for feeding. The deaths among ewes are few, and among lambs a trifle higher than usual. Barren ewes are more numerous than usual. Where these are above age and useless for further breeding, they should, if in a fleshy condition, be sent to the butcher at once as mutton is in much request, and fetches a good price when the quality is of the best.

Fortunately, green foods, including Turnips, Swedes, Rape, and Kale, are plentiful, although the plants are fast running to seed owing to the warm weather of March. Fortunately, Rye and Italian Rye grass are growing rapidly, and, with these foods and a plentiful supply of Mangold, the food outlook for the sheep farmer is promising. As dry food for suckling ewes and lambs nothing is equal to good Sainfoin hay. Pea chaff, malt dust, Palm kernel, rice meal and other foods as are available. Lambs thrive well upon a good supply of green food, but as well, of course, as what they could be given if the cost of Linseed cake and other concentrated foods, but as fat lambs are not required what loss there is in this is compensated by a saving in expensive food. Purchasing Linseed cake at £20 per ton is a serious matter.

To the arable sheep farmer there is still another side to the question in the shortage of concentrated foods. I allude to the loss of weight in the corn crops by the feeding of sheep on light arable land. With the penning system on light land the sheep provide manure which stimulate such crops as Oats and Barley. No farmer expects to find animal manure sufficient for his six hundred acres of arable land. In this case he has recourse to artificial manures, which at their present high price renders the expenses higher in cultivation of the cereal crops.

PIGS.

No other farm animal develops so quickly and cheaply as the pig. Pigs may be kept by the small cultivator during the summer and early autumn period, when the garden provides a certain amount of food. At that period of the year too, the weather is favourable, much more so than the three months following November, when a month plays such an important part in the welfare of young pigs, and at a time when the labour on the sty becomes scarce on the allotment or small garden.

Where reasonable facility exists for the keeping of a breeding sow—a sty with a run out in a grass orchard, or even an open yard—the phase of pig keeping should be encouraged as the more pigs that can be reared the better it is in every respect for the community at large. Young pigs are very dear, a good type of pig at seven weeks old being worth quite 30s.

For those who contemplate the keeping of a breeding sow I will briefly describe a few of the more desirable breeds. A good cross between two approved pure breeds is superior to the progeny of any first cross. Having tried many breeds, I pin my faith to a large Yorkshire White sow and a Middle White boar. One can reasonably expect a sow thus mated to rear successfully ten pigs, giving certainly three such litters in two years, occasionally more; indeed, many sows of this breed rear twelve young ones. No animal should be mated until at least eight months old, and this rule applies to pigs of both sexes.

In choosing a young sow for breeding, be sure she has fourteen teats, or certainly not fewer than twelve, because in case she should produce an extra large litter the young ones which could not claim a teat would not thrive. With young pigs there is no such thing as give and take, and the young animals adhere closely to their own sucking teats.

The advantage of crossing the Large White sow with a Middle White boar is that the progeny are stouter built, and more inclined to thicken than those of the pure Large White breed, which is more suitable for bacon, whereas the cross comes quickly to hand as porkers.

The Berkshire breed is in much favour with some persons, and where quick growing pigs of, say, four to six score are required, the Berkshire has much to recommend it. The fault with pure bred Berkshires is that the litters are too often few in number—six or eight represents a good litter. I need hardly say there are exceptions to this rule, and so me who have an extra good type of this breed obtain litters of ten, and sometimes more. The cross with a Middle White boar gives an improvement in numbers generally. A large Yorkshire White or a Black Sussex sow mated with a Berkshire boar also produces good porkers. Strange as it may appear, a white boar crossed with a black sow invariably produces pure white progeny.

For bacon the Tamworth breed of pigs is quite good; the animals are healthy, and make within a reasonable period good bacon pigs. For those who require pork only the Tamworth is not so desirable. The food required for a breeding sow is more easily obtained than for any other purpose. It is surprising what a quantity of natural food a sow finds in a grass orchard, for example—Cabbage, or leaves of any of the Brassica tribe, from June until November, provide half a living; Mangold is then available until June with the addition of Trifolium, Vetches, Parsnips, Jerusalem Artichokes, Carrots, and diseased Potatos. I prefer to keep the small Potatos for young pigs, as they form excellent food, especially when steamed, rather than boiled. If the sows can have once a day some slops with a small quantity of meal—middlings, or preferably bran—no difficulty need be experienced. Free exercise is a salient point in the welfare of a sow, especially when she is pregnant.

I am making full use of Sugar Beet for young pigs. The roots are steamed slowly, and when cooked are mashed into a jelly, mixed with a very small portion of meal and fresh separated milk, making in all appreciative food. This is the best practical use I have yet been able to make of Sugar Beet, and for this purpose it is a profitable crop to grow. The allotment-holder might easily provide a quantity of good pig food by growing this root vegetable. The leaves, too, which the plant is profusely furnished with, make desirable food. Sow the seed in drills 18 inches wide early in April, where spring frosts are not prevalent, and a fortnight later in colder districts. Thin the plants to 15 inches apart in the drills and keep them free from weeds. The roots need not be lifted until January if it is more convenient to leave them in the ground, as frost does not injure them, as they are well protected by the leaves and by the manner in which the crown of the root is buried under the soil.

E. Molyneux.

Obituary.

ALFRED PATRICK.—*Horticulture*, U.S.A., announces the death of Mr. Alfred Patrick, florist, of Auburn, New York, aged 69 years. Mr. Patrick was born in Manchester, England. He was at one time gardener to the Duke of Manchester, and was in business in South Wales for several years.

MARKETS.

COVENT GARDEN, April 17.

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

	s. d.	s. d.
All 48's, per doz.		
Aralias	7 0– 8 0	
Araucaria excelsa	7 0– 8 0	
Asparagus plumosus	10 0–12 0	
— Sprengeri ...	9 0–10 0	
Aspidistra, green...	36 0–42 0	
Begonia megastigma... ...	18 0–24 0	
Cyclamens	21 0–24 0	

	s. d.	s. d.
Cineraias	10 0–12 0	
Erica persoluta ...	36 0–42 0	
— Wilmoreana ...	30 0–36 0	
Genistas	18 0–24 0	
Margnerites, white	9 0–10 0	
Mignonette ...	12 0–15 0	
Roses, polyanthus	24 0–30 0	
— rambler (each)	5 0– 12 0	

REMARKS.—Trade still remains quiet in this department. All Ferns are being offered in better condition. Roses, including Polyanthus and Ramblers, are on sale in variously sized pots. Cyclamens are now over.

Ferns and Palms: Average Wholesale Prices

	s. d.	s. d.
Adiantum cuneatum, 48's, per doz.	9 0–10 0	
— elegans ...	9 0–10 0	
Asplenium, 48's, per doz.	9 0–12 0	
— 32's	21 0–24 0	
— nidus, 48's ...	10 0–12 0	
Cyrtomium, 48's ...	8 0–10 0	

	s. d.	s. d.
Nephrolepis, in variety, 48's ...	12 0–18 0	
— 32's ...	24 0–36 0	
Pteris, in variety, 48's ...	8 0–12 0	
— large 60's ...	4 0– 5 0	
— small 60's ...	3 0– 3 6	
— 72's, per tray of 15's	2 0– 2 6	

Cut Flowers, &c.: Average Wholesale Prices.

	s. d.	s. d.
Anemone fulgens per doz. bun...	4 0– 5 0	
Arums—		
— (Richardias), per doz. blms.	4 0– 6 0	
Azalea, white, per doz. bunches ..	5 0– 6 0	
Carnations, per doz. — blooms, best American var.	2 6– 4 0	
Croton leaves, per bun. ...	1 3– 1 6	
Daffodils (single), per doz. bun —		
Barri ...	2 6– 3 0	
— Emperor ...	2 6– 3 0	
— Sir Watkin ...	2 0– 3 0	
— Victoria ...	2 6– 3 6	
Encharis, per doz. blooms	3 0– 4 0	
Gardenias, per box (12's)	5 0– 6 0	
— (18's)	3 0– 4 0	
Heather, white, per doz. bun,...	9 0–12 0	
Lilium longiflorum, long	5 0– 6 0	
— — rubrum, per doz. long	4 6– 5 0	
— — short, per doz blooms ...	2 6– 3 0	
Lily-of-the-Valley, per doz. bun ...	36 0–42 0	
Narcissus, ornatus, per doz. bun.	2 0– 3 0	
Orchids, per doz:—		
— Cattleyas ...	18 0 —	

	s. d.	s. d.
Pelargoniums, double scarlet, per doz. bunches...	12 0–18 0	
— white, per doz. bunches ...	6 0– 8 0	
Primroses, per doz bunches	1 0– 1 6	
Roses, per doz blooms—		
— Fran Karl Druschki ...	3 0– 5 0	
— General Jacqueminot	2 0– 2 6	
— Joseph Lowe ...	4 0– 5 0	
— Lady Hillingdon ...	2 6– 3 0	
— Ladylove	4 0– 6 0	
— Liberty	3 0– 5 0	
— Madame Abel Chatenay ...	3 0– 4 0	
— Niphetos	2 6– 3 0	
— Richmond	0– 3 0	
— Sunburst	4 0– 6 0	
Star (alliums), per doz. bunches ...	3 0– 3 6	
Stephanotis, per 72 trusses	4 0– 4 6	
Stock, English, per doz. bunches ...	4 0– 6 0	
Sweet Peas, Nationals, per doz. bun ...	0 0–12 0	
Tulips, per doz. blooms —		
— Darwin, various	1 0– 2 0	
— Single, white ...	1 0– 2 6	
— — Yellow ...	1 0– 2 6	
— — Pink	1 6– 2 0	
— — Red	1 3– 1 6	
Violets, per doz. bun.	3 0– 4 0	

Cut Foliage, &c.: Average Wholesale Prices.

	s. d.	s. d.
Adiantum (Maiden hair Fern) best, per doz. bun...	8 0–10 0	
Asparagus plumosus, long trails, per half dozen	2 6– 3 0	
— medium, doz. bunches	18 0–21 0	
— Sprengeri ...	10 0–15 0	

	s. d.	s. d.
Berberis, per doz. bun. ...	6 0– 8 0	
Carnation foliage, doz. bunches...	4 0– 5 0	
Cycas leaves, per doz.	3 0– 6 0	
Ivy leaves, per doz. bunches ...	2 0– 2 6	
Moss, gross bun...	7 0– 8 0	
Smilax, per bun. of 6 trails ...	2 0– 2 6	

REMARKS.—Trade has fallen off during the last few days, both in London and the provinces, though the supply of all leaves had been considerably larger up to last Saturday. Dutch Tulips have increased in number, and there is a good selection of various shades at lower prices. The more favoured colour is mauve, but the supply of mauve varieties is limited. Outdoor Daffodils are now on sale. Emperor and Victoria are the best selling sorts at present. Gardenias and small quantities of Stephanotis are arriving. A few packages of French flowers are still being received, principally Pads of Spanish Iris, cut in the bud stage, arrive in good condition, but other flowers, such as Stocks and Star of Bethlehem (Allium) are well advanced before they reach the market. A few Anemones arriving are practically unsaleable. Supplies from the Channel Islands are still very irregular, and the quality is affected by the delay in transit. This is a most unsatisfactory season for flower growers in Guernsey and Scilly.

Fruit: Average Wholesale Prices.

	s. d.	s. d.
Apples :—		
— English, per box, 30 to 45 0		
— Russets, French, in cases of about 60 to 70 lbs. ...	50 0–60 0	
Dates, per box ..	1 8 —	
Grapes :—		
— Almeria, per barrel (½ doz. lbs.)	70 0–75 0	

	s. d.	s. d.
Grapes, con —		
— Gros Colmar, per lb ...	12 0–15 0	
— Black Hamburgh, per lb ..	6 0–10 0	
Lemons, per case...	40 0– 70 0	
Oranges, per case	85 0–150 0	
Strawberries, forced per lb. ..	5 0–16 0	
Walnuts, kiln dried, per cwt. ...	54 0–105 0	

Vegetables: Average Wholesale Prices.

	s. d.	s. d.
Artichoke, Jerusalem per ½ bushel	1 3– 1 9	
Asparagus (English), per bundle ...	6 0– 9 0	
— Lauris	6 6–10 0	
Beans :—		
— Broad, per pad	6 0– 7 0	
— French (Channel Islands), per lb.	1 6– 1 9	
Beetroot, per cwt	5 0– 6 0	
Carrots, new, per doz. bunches ...	6 0– 8 0	
— per bag ...	5 0– 7 0	
Cauliflowers per doz	3 0– 5 0	
Celeriac, per doz. ..	6 0– 8 0	
Celery, per bundle	1 0– 4 0	
Cucumbers, per doz	8 0–12 0	
Endive, per doz ...	2 6– 3 0	
Garlic, per lb. ...	0 8 —	
Greens, per bag ...	4 0– 5 0	
Herbs, per doz bun.	2 0– 4 0	
Horseradish, per bun.	3 0– 4 0	
Leeks, per doz. bun.	2 6– 4 0	
Lettuce, Cabbage, per doz ...	0 6– 1 6	
Mint, forced, per doz. bun	2 0– 6 0	
Mushrooms, per lb.	2 0– 3 6	
Mustard and Cress, per doz. punnets	1 0– 1 3	

	s. d.	s. d.
Onions, French, per cwt. ...	24 0–30 0	
— spring, per doz. bun. ...	1 6– 4 0	
— Valencia, per case (4 tiers)...	26 0–34 0	
— — (5 tiers) ...	26 0–34 0	
Parsley, per strike...	2 6– 3 0	
Parsnips, per bag...	4 0– 5 0	
Peas, per lb. ...	2 6– 3 0	
Potatos, new, per lb.	0 4½–0 6	
Radishes, per doz. bunches ...	2 0– 3 0	
Rhubarb, forced, per doz.	1 6– 2 0	
— natural, per doz.	3 0– 5 0	
Savoys, per tally ...	8 0–10 0	
Seakale, per punnet	1 6– 2 0	
Shallots, per lb.	0 9– 1 0	
Spinach, per bus.	4 0– 5 0	
Swedes, per bag ...	2 0– 3 0	
Tomatos, per lb. ...	3 0– 4 6	
Turnips, per bag ...	10 0–12 0	
new, per bunch	2 6 —	
Turnip tops, per bag (72 lbs.)	1 6– 2 6	
Vegetable Marrows, per doz ...	0 6–12 0	
Watercress, per doz.	0 8– 0 10	

REMARKS.—Supplies of English Apples are now very limited, but a few boxes of Russets continue to arrive from France. Of English Grapes a few new season Black Hamburgh continue available. Supplies of Gros Colmar are finishing. And those of Almeria (Spanish) are also on the decrease. Forced Strawberries are not so plentiful as usual at this season of the year. The following forced vegetables are on offer:—Asparagus, Dwarf Beans, Broad Beans, Peas, New Potatos, Mushrooms, Cucumbers, Seakale, Vegetable Marrows, and English and French salads. *E. H. K. Covent Garden Market, April 17, 1918.*

DEBATING SOCIETIES.

BATH GARDENERS'. A meeting of the Bath Gardeners' Society was held on the 8th inst. Mr. F. Barter presided over a good attendance. The chairman stated that three societies—Mr. H. Sparks had resigned, and Mr. F. Mott had taken up his duties *pro tem.* Mr. C. Wall, in a paper on Onion Growing, pointed out that the Onion required a long season of growth, and being quite hardy could be sown early. By sowing under glass and transplanting in the open later, double the weight of crops is obtained on the space required for sowing direct in the open.

SOUTHAMPTON AND DISTRICT GARDENERS' Daffodils, Tulips, and other spring flowers were exhibited at the above Society's spring show. The judges awarded silver medals to Messrs. Yokes and Hartnell, and bronze medals to Messrs. Yokes, Hartnell, Clarke and Bird. Messrs. Rogers and Son, Bassett, staged a good collection of alpines and shrubs. The subject of the lecture was "The Evolution of the Daffodil," by Mr. W. F. M. Copeland. Mr. Copeland gave all the flowers he had staged to the local hospitals.

EAST ANGLIAN HORTICULTURAL. The April meeting of the above Club was held on the 10th inst., Mr. H. Perry presiding. Mr. C. H. Fox read a paper on Seed Sowing and Tran planting. He emphasised the point that the less treading of the soil after planting Potatos the better. Onions, Parsnips, Salsify, Celery, Lettuce, Turnips, Peas, Beans, Carrots, and other crops were dealt with, their sowing and subsequent treatment being also touched upon.

REPLY.

TROUT

IN reply to *J. E.*, p. 142, trout require an abundance of food in the form of water insects and plenty of water plants are necessary for the insects to feed on. He should write to the Solway Fishery Co., Dumfries, for advice. This firm supplies everything he could require. *H. E. Wootton, St. Andrew's Hospital, Dollis Hill, Willesden.*

GARDENING APPOINTMENTS.

Mr. H. H. Henness, for the past year and 10 months Gardener to G. L. Tait, Esq., Bee Court, Pangbourne, Reading, Berks, as Gardener to W. Bousey, Esq., Wood Cottage, Streatley-on-Thames, Berkshire.

Mr. W. Foord, for the past 18 months Gardener to A. Bathurst, Esq., St. Margaret's-at-Cliffe, as Gardener to Henry Beldham, Esq., Lympne Castle, near Hythe, Kent.

SCHEDULE RECEIVED.

Cottage Garden Vegetable and Bottled Fruit Show at Heath End House, near Basingstoke, on Saturday, August 24, 1918.

BOOK: *J. R. The Violet Book*, by A. and D. Allen-Brown, price 5s. 4d., post free, from our publishing department.

MEASURING LAND: *H. I. R.* The easiest way to measure the acreage of a piece of land of irregular outline is to divide it with a line into triangles, following as far as possible the configuration of the area. Measure the area of each triangle, add the totals together, and make allowances for any irregularities outside the base lines of the triangles. Needless to say, the smaller the triangles you mark out, the more accurate will your measurement be.

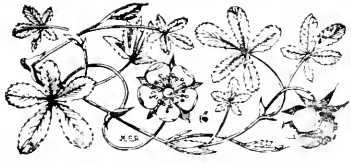
NAMES OF FRUITS: *W. D. and Sons*—Pears (oblong), Nec Plus Meuris; (round) Olivier de Serres.—*A. C. M.* Apple Lady Henniker. *Barnwell.* 1. Brownlee's Russet. 2. Lady Lennox.

POTATOS FOR "SEED": *A. L.* The regulation size for seed Potatos varies according to the variety, but as a rule the setts should pass through a riddle having a 2-inch mesh. Large Potatos can, of course, be cut before being sown, but naturally this increases the labour. If you wish to have full information on the subject of the Government regulations, obtain a copy of the Seed Potatos (1917) Order, which can be had through any bookseller, or from H.M. Stationery Office, Imperial House, Kingsway, W.C. 2.

TROPÆOLUM SPECIOSUM: *J. R.* In order to obtain success in growing Tropæolum speciosum it is necessary to pay careful attention to details. The ground should be deeply trenched, and the surface soil should consist of well-rotted manure, leaf-mould, and loam, passed through a coarse sieve. The roots should be planted at the beginning of November about 3 inches below the soil, and covered with a layer of finely sifted well-rotted manure. Place a few large stones in front of the bed, and a layer of smaller ones over the manure, to shade the roots and retain moisture during dry weather, and water the plants on frequent occasions. When first planting, provide some support for the tendrils to cling to. The plant is at its best rambling over a bare wall covered with galvanised netting, loosely nailed over the surface to a height of 15 or so feet, but it can also be grown over Holly hedges or Yew hedges.

VINES: *C. B.* One shoot only should be left on each spur of your vines. The first bunch usually comes opposite the fourth or fifth leaf-stalk on the lateral, and supposing the rods are 2 feet apart, three leaves may remain beyond the bunch. If the space is less than 2 feet there will only be room for two leaves to develop, and the laterals should be stopped as soon as they are from 7 to 9 inches in length. Stable manure should not be placed on the border much before mid-summer, and then only in sufficient quantity to shade the soil without preventing aeration. Up to that time depend on concentrated manures of which there are several on the market, or you may apply sulphate of ammonia at the rate of half an ounce and superphosphate 5 ounces to the square yard, repeating the dose of sulphate early in June. A good sprinkling of ashes from burnt wood or vegetable refuse would be beneficial at any time. Liquid manure may be applied, diluted in summer, before the berries commence to colour, and at a greater strength when the vines are dormant. Shading should not be necessary for healthy vines in well-constructed and amply ventilated houses, unless, possibly, for an hour or two during a very hot day when the berries are stoning.

Communications Received.—W. T. I. H. Miss F.—W. B. H.—W. F. R.—B. G. A.—R. S. S. A.—C. T.—T. W. H.—G. H. S.—B. & Sons—J. P.—H. E. O.—G. H. H. W.—W. W. G.



THE
Gardeners' Chronicle
No. 1635.—SATURDAY, APRIL 27, 1918

CONTENTS.

ILLUSTRATIONS.

ON CALORIES.

TO the bewilderment of the driver who had but recently learned to drive, the car, after a sudden slowing down and a jerk or two, stopped. Attempts to "start her up" again were fruitless, hitting the needle of the carburetter equally so, nor did fumbling with the magneto produce any result. Of course, the break-down occurred in the loneliest part of the road, and gloom settled on the driver. Then with an inspiration of despair, he bethought him of the petrol tank. He unscrewed the cap, and found the tank dry. The petrol had given out. It was but an affair of a minute or two to fill up and crank, and off went the car with a driver feeling very foolish, to think that he could have forgotten for a moment that a car cannot run without petrol.

This momentary lapse on the part of the driver represents the habitual state of mind of most of us with respect to ourselves as autocars. We take our three or four meals a day, and go about our daily task; and if we pay any attention at all to food, it is rather from the point of view of the pleasure it gives us than its worth as a source of energy. Yet at the present time it is all-important that we should understand that just as a gallon of petrol will serve to drive a car a certain distance and no more, so the food we eat will enable us to do a certain amount of work, and no more; that just as the petrol is consumed by burning, and in its consumption liberates energy which is put to the work of driving the car, so food—the fuel of the body—is consumed in the body by burning, and in its consumption liberates energy which is used either as heat to maintain our temperature or to do muscular and other bodily work. Furthermore, just as all engines have a certain efficiency—that is, are able to put into use a certain portion and no more of the total energy liberated by the combustion of the fuel, so the human body has a certain efficiency, and can use for doing work only a certain portion—about 30 per cent.—of the energy liberated by the combustion of the fuel supplied to it in the form of food.

These facts afford us a starting-point for finding out what is the ration of food which will enable us to work. To discover this we have to learn first the fuel value of our food, and then the amount of food which will supply the energy for doing our daily task.

To find out the energy value of food is easy. All that has to be done is to burn the food under such conditions that all the heat produced during combustion is used to warm a known weight of water. If we ascertain the temperature of the water at the beginning and at the end of the experiment, we are able to express the result thus: a given weight of food produces when burned enough energy to do the work of raising the temperature of a given weight of water so many degrees.

In order to have a unit for comparison, we agree to define our heat unit or large calory as the amount of heat required to raise the temperature of a kilogramme (2·2 lbs.) of water 1 degree Centigrade. Since heat energy may be used to do work, we are able to measure the calory in terms of work, and by this means to discover that the heat contained in a calory when transformed into work will lift 425 kilogrammes one metre—that is, 1·1 ton one foot. Furthermore, since we know that the fuel value of the foods we eat resides in the digested parts of the food, we can, by finding out the proportion of digested to undigested food, correct the fuel values by subtracting from them the values of the unused (undigested) foods. We thus get the heat values of food actually used in the body. For example, with respect to one class of food, the nitrogenous foodstuffs known as proteins, we know that, although the proteins are digested, they do not undergo complete combustion in the body; before combustion they are split into simpler substances, one of which (urea) is not used at all, but is excreted. It is, therefore, necessary to deduct from the total heat value of a protein the heat value of the urea which is split off from that protein and discarded unconsumed by the body.

Again, since it is known that the foods used by the body for heat- and energy-producing purposes are fats, carbohydrates (starch, sugar, etc.), and proteins, and since it is possible experimentally to find out the number of large calories in 1 pound of each of these substances, and to discover also how much of each of these foods is digested and consumed in the body, we can compare these foods with one another with respect to the calories they contain. For example, we find by burning tests that a given weight of fat develops 2·27 times as much heat as an equal weight of starch. We also find that in an animal the proportion of starch which actually gets into the body and is consumed and produces heat is less than the proportion of fat which is utilised by burning in the body.

In this way it has been found that the heat value of fat is upwards of twice that of starch, and that the heat value of protein is about the same as that of starch.

Evidently this knowledge is all-important from the point of view of rationing, for although from the point of view of heat production any one of these substances is efficient, they differ in efficiency to such an extent that it would require about 2¼ times as much starch as it would fat to produce the heat necessary for providing the energy for bodily work.

It will be remembered that the large calory has already been defined as the quantity of heat required to raise the temperature of 1 kilogramme (2·2lbs.) of water 1° C. This unit is too large for the present purpose of estimating human food values. So instead of the large calory we will use as our unit the little calory. This is easily done with the metric system, for 1 kilogramme is equal to 1,000 grams, and one little calory becomes, therefore, the amount of heat required to raise the temperature of one gram (about 1·30 oz.) of water 1° C.

We are thus in a position to state the number of little calories in a given weight of each of the essential foodstuffs contained in human food:—

1 lb. of pure fat yields about 4,208 calories.

1 lb. of pure protein yields about 1,856 calories.

1 lb. of pure starch yields about 1,856 calories.

The amounts of fat, protein, and carbohydrate contained in each kind of food being known as a result of many chemical analyses, it is easy to ascertain the number of calories provided to the body for use therein by a given quantity of such foods as meat, milk, Potatos, margarine, etc., which make up a meal. The following table* gives this information:—

Food.	Protein.	Fat.	Carbohydrates.	Calories.
	Per cent.	Per cent.	Per cent.	Per pound.
Beef, Veal, and Mutton (average)	14·5	16·1	—	913
Rabbit	21·5	2·5	—	504
Fish (without refuse)	18·4	4·3	—	506
Fish (rich in fat)—				
Herring	20·5	7·1	—	660
Salmon	22	12·8	—	950
Milk (20 oz. to pint)	3·3	4	5	332
Butter	1	85	—	3580
Margarine	1·2	85	—	3570
Cheese	25·2	33·7	2·4	1950
Bread (average)	9·2	1·3	53·1	1215
Rice	7·1	0·4	79·2	1620
Sugar (average)	—	—	95	1700
Jam	0·6	0·1	64	1115
Dry Beans	23·1	2·2	53·6	1520
Potatos	1·8	0·1	14·7	310
Onions, Carrots, &c.	1·3	0·3	8	184
Green vegetables	1·4	0·2	4·8	145
Tomatos	0·9	0·4	3·9	105
Cucumber	0·8	0·1	2·1	70
Fruit (average)	0·4	0·5	8	180
Beer	0·6	—	1·3	95

* Compiled from a little book on "Food Values," by Margaret McKillop. (George Routledge.) 1s. 6d. net.

(To be continued.)

ON INCREASED FOOD PRODUCTION.

POTATOS.

AFTER an experience of fifty years, I know of no crop that will so well repay for high class culture as the Potato. Almost any kind of soil will grow a crop of Potatos—good, bad, or indifferent; but to grow fine crops of good quality tubers fit for exhibition and table use, the best soils are those of the old red sandstone, and the worst kinds are strong clays of a cold, tenacious character. Heavy soils should be well dug or trenched in the late autumn or winter, and at the same time a quantity of rich, well decayed farmyard manure should be added. Light soils should be prepared a short time before, or at planting time. Heavy soils require opening up, in order that the frost may pulverise them, and make them friable and mellow to receive the seed tubers, but light or sandy soils, when dug in winter, have a tendency to be too free and open, and, in consequence, do not hold moisture so well, and, should a dry summer prevail, the crops are bound to suffer.

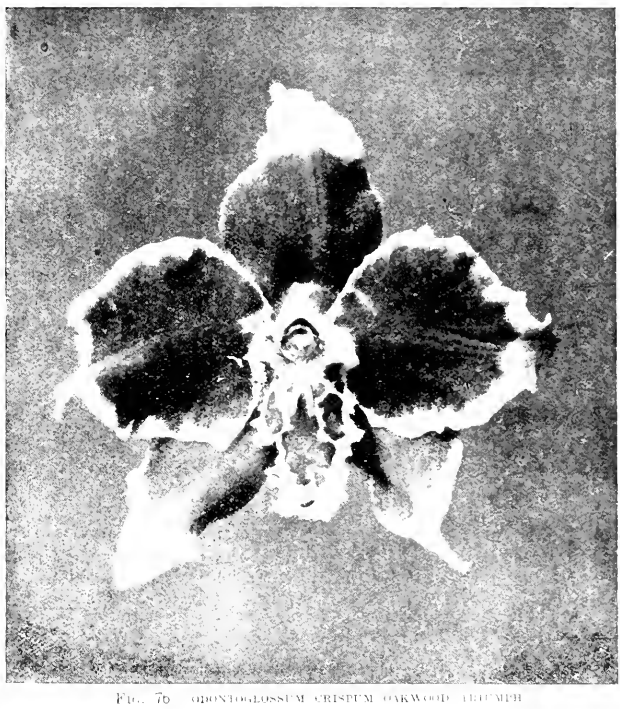


FIG. 76.—ODONTOGLOSSUM CRISPUM OAKWOOD TRIUMPH.

Whichever method of preparation is adopted, always enrich the ground with plenty of manure, and if the soil is considered deficient in lime, give a good sprinkling of lime over the surface previous to planting. If burnt lime is cheap, and not difficult to procure, apply it freely, not, however, when the manure is dug in, but in the spring, when preparations are being made for planting. Manure should always be applied some time previous to lime. Lightly forked in, lime will benefit most soils, rendering them sweet and fit for almost any kind of crop. In the case of light soils, marl may be added, and this material will as a rule make the use of farmyard manure unnecessary for a season.

Sulphate of potash is also an excellent fertiliser for Potatos. One open handful to 5 yards of running drill, or, say, 1 lb. to 30 square yards, in autumn, will generally prove a suitable dressing.

It is highly important to change the seed tubers frequently; if not every year, at least every second or third year. It is important, too, that the seed be well sprouted, and previous to planting all the side shoots should be rubbed off, leaving only one, or never more than two, strong shoots at the top. The tubers should be of medium size, and may be planted whole, with perhaps a thin portion cut off the lower end to ensure the tuber rotting, as few Potatos form when the old set remains sound and hard. Nothing is gained by close planting; especially is this true in the case of main crop varieties. The drills for early and second early varieties should be 2 feet to 2 feet 3 inches apart, and the tubers spaced 1 foot or so in the drills, whilst for late varieties, 2½ feet (in the case of extra robust varieties 3 feet) by 1½ feet should be allowed. Wide planting helps to keep the crop free from late blight disease. The ground should be deeply forked prior to planting, and a few days before planting again lightly forked, to make it fine and friable. This remark applies to heavy soils more than to light ones. The sets are usually planted either by means of a dibber or by drawing drills with a hoe, but the best way is to plant with the spade or fork, especially on heavy soils. By this extra working when planting the soil is left in a fine, open condition. Whichever method is adopted, the tubers should be set at a depth of from 4 to 5 inches, according to the nature of the soil and time of planting. If manure is applied at planting time the seed tubers must not come in direct contact with the dung. The soil should be well hoed as soon as the Potato tops can be well seen in the rows. Hoeing keeps the crop clean, and promotes good growth. Previous to earthing up, it is good practice to fork the spaces between the rows, that the soil may be loose and dry. Earthing up should be done twice, at intervals of a week or two. Draw the soil well up into sharp ridges, and do it early—as soon as the "shaws" or "haulm" are large enough to admit of the work being done properly.

I have grown as many as 50 varieties in one year, but I do not grow many nowadays. One or two sorts at the most, of each section will be quite enough for general purposes. Early varieties should be planted in March or early in April, in a well-sheltered situation. Second early varieties planted early in April will be ready to dig in August, according to the season and locality, and thus follow in succession the early sorts. Late or main crop varieties, though planted in March and April, will not mature so quickly as the second earlies, but will continue to grow till September and October. Such varieties may be planted up to the month of May, and still produce splendid crops.

All Potatos should be lifted as soon as the tubers are mature and ripe, and seed tubers should be well "greened" before storing. Seed selected in this way generally gives splendid crops, even though grown on the same ground for a number of years.

No method can surpass storing in "pits" or "clamps," with plenty of Wheat straw and soil for covering. If the clamp is well made the Potatos will keep fresh and not shrivel all through the winter, and when required for kitchen use, or for seed purposes, to be "sprouted" previous to planting, they can be depended upon to have lost little or none of their good quality. *Delta.*

ORCHID NOTES AND CLEANINGS.

ODONTOGLOSSUM CRISPUM OAKWOOD TRIUMPH.

FINE and richly blotched forms of Odontoglossum crispum were great favourites with the late Norman C. Cookson, Esq., Oakwood, Wylam-on-Tyne, and the list of awards by the Orchid Committee of the Royal Horticultural Society contains the names of a dozen of his best, including the varieties O. crispum, Cooksoni, Cooksoniæ, and Leonard Perfect, for which latter a First-class Certificate was awarded May 12, 1908.

Mr. Cookson, who was one of the most successful Orchid hybridists, seeing the difficulty of importing handsome blotched forms of O. crispum, and the possibility of improving on them by home-raised seedlings of pairs of selected varieties, set to work in that direction. O. crispum Leonard Perfect, crossed with O. c. Phœbe, produced the handsome O. crispum Oakwood Triumph, which secured an Award of Merit at the Royal Horticultural Society on April 9 last. O. crispum Oakwood Triumph (see fig. 76) adheres closely to the fine form and bold markings of O. c. Leonard Perfect, but the rich ruby-red colouring on white ground is more intense and broadly expanded than in the parent variety, whose one defect of varying considerably in quality from one season to another seems to have been corrected in the offspring by greater depth of colour. It is pleasant for Mrs. Cookson and her gardener (Mr. H. J. Chapman) to watch the development of these interesting plants, in which they had a common interest with the originator.

COTTON'S "PLANTER'S MANUAL."

THE literature of fruit culture in Britain in Stuart times does not offer much of interest, the translation by Evelyn of Quintinye's classic work evidently rather overawed the native writers. Other authors such as Markham and Hartlib relied on foreign works, and were little more than translators, and it was not until Worlidge published his various books that really native works could be claimed for this period.

A few years after Worlidge's *Systema Horticulturae* was published, the *Planter's Manual* appeared, by Charles Cotton, hitherto known as a poet and for his association with Walton in the

Compleat Angler. The son of a rich landowner, he travelled in France, and became a well-known figure of his day.

The book under consideration was published in 1675, and the title-page reads "*The Planter's Manual*, being instructions for the Raising, Planting, and Cultivating all sorts of Fruit Trees, whether stone-fruits or pepin-fruits, with their Natures and Seasons. Very useful for such as are Curious in Planting and Grafting. By Charles Cotton, Esq."

The preface is worth quoting at length :—

"To the Reader.

Though this little Treatise on Fruit-Trees was only written for the private satisfaction of a very worthy Gentleman, who is exceedingly curious in the choice of his Fruits, and has great Judgement in Planting; yet having heard that Gentleman say it had given him the greatest satisfaction of any Bauble he had seen of this kind, I began to think it might not be altogether unuseful to the Publick also, and therefore sent it to the Press, which is all the excuse I can make, either for the writing or publishing of it. But I think it fit to tell you, That although the Planter who shall pursue the following Directions, may possibly find himself defeated in his expectation (especially in the more Northerly Provinces of this Kingdom) as to the precise time of his fruits' maturity, and that a Fruit planted and extended against a good Brick wall, is more proper here with us (where we have never too much sun) than an Espallier Pallisaded at some inches distance from it; yet he will infallibly find his Industry abundantly gratified in the promised effects, at a something later Season. And although the reader will here meet with several names of Fruits he peradventure never heard of before; yet we know and see, that more tender plants, as Oranges, Lemons, Citrons, etc., are yearly imported from much remoter Countries than France; and seeing that (for ought I ever heard) Fruit-Trees are no contraband commodity betwixt the Nations, I cannot conceive but that it is worth the Curiosity, pains and cost to furnish ourselves from thence with those of the greatest excellence, both for Beauty and Flavour; nor why we should not better ourselves this way by them, as altogether to be debauched by their effeminate manners, luxurious kickshaws, and fantastic fashions, by which we are already sufficiently Frenchified, and more than in the opinion of the wiser sort of men, is consistent either with the constitution, or indeed the honour of the English Nation."

From this evidence it would naturally be assumed that the work was by Cotton himself, and I held this opinion until recently, when by chance hunting for certain varieties of Cherries, I turned shortly after to a scarce French book entitled *Instructions pour le Jardin Fruitier*, when the certain resemblance led to a closer examination, which revealed the fact that Cotton's supposed work is but a translation and must therefore be deleted from his list of writings. This has not, to my knowledge, been pointed out before; indeed the *Dictionary of National Biography* refers to him as a skilled horticulturist, presumably on the strength of the work under consideration.

This being so, it will be interesting to examine the original of his translation more closely. The *Instructions* form a small duodecimo, and were first published in 1653, the author concealing his identity on the title-page by the letters M.R.T.P.D.S.M." As often the case in anonymous French writings of this period, the secret is given away in the "Privilège," and here we learn that these letters refer to M. Robert Triquet, Prieur de St. Marc. The preface furthermore informs us that Triquet was only editor, and the book was written by one François Vanlier, physician to Louis XIV. Vanlier is remembered in medicine for his advocacy of antimony and quinine as drugs, and so far did he press his ideas that his brother physicians were strongly antagonistic, and had the last word in the controversy by attributing his death to an overdose of the first-named remedy. In his early days he was physician to Maria de Medici, and is said to have had an extraordinary influence over her. This brought him into conflict with the powerful Richelieu, who promptly confined him in prison from 1631 to 1643. After his release he was appointed premier physician to Louis XIV., and as botany and medicine were in those days closely allied he took charge of the Jardin des Plantes. Here he made several remarkable innovations, among which was his substitution of anatomical lessons for the rather vague discourses on the "interior of plants" which had formerly held place. He was the first to use quinine as a drug, according to the *Bibliographie Universelle*, from which these facts are drawn.

The *Instructions* were found among his papers after his death, and by the desire of several "curious" persons were edited by Triquet and first published in 1653. A third edition appeared in 1658, which contains the additional chapter on the pruning and culture of Oranges, Lemons, Citrons, Pomegranates and Jasmins d'Espagne. In the light of this knowledge it will be seen that Cotton's preface rather cleverly detracts from definitely claiming authorship, though a casual reading would leave little doubt on the point. The plagiarisms of horticultural writers are unfortunately many, and I hope to show in a further article some others which I have traced, and which are of interest in many ways, especially to those who wish to establish dates for the introduction of fruits or plants, when it is obviously important to trace the references to their original source. *E. A. Bunyard*

NARCISSUS IRENE COPELAND.

Not many raisers have taken up the cause of the double Daffodil with any degree of seriousness, probably because double flowers are not very fashionable in these days, and the old early N. Telamonius plenus is not particularly beloved of Daffodil specialists. But a few of the newer doubles have become popular, and Mr. W. F. M. Copeland has done not a little to add to their popularity and increase their attractiveness. His new variety, Irene Copeland (see fig. 77), certainly has attractions which cannot be overlooked. It was exhibited by Mr. Copeland at the Royal Horticultural Society's meeting of April 9. This variety is the result of crossing 'Giant Leedsii' form with Sulphur Phoenix. It is a round flower, with six rows of rounded, white, and fairly flat perianth segments, and a number of pale citron cup segments, the whole making a charming flower of circular rose-like form, with a diameter of 5¾ inches. The stem often reaches a height of 20 inches, and is stiff enough to carry the blooms erect. It is particularly stout just where it joins the flower, thus obviating that neck weakness which is so great a defect in many weighty varieties. Mr. Copeland is to be congratulated upon his achievement among doubles, and it is to be hoped he has many other good things in this section in store for Daffodil lovers. *C.*

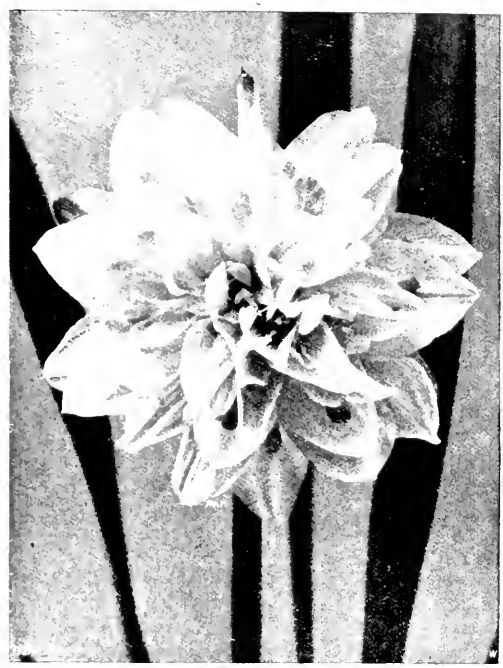


FIG. 77.—NARCISSUS IRENE COPELAND.

TREES AND SHRUBS.

AMERICAN RED OAKS

(See pp. 65, 166.)

At the present day the Red Oaks, amongst other ornamental species, are being planted in this country, somewhat to the exclusion of our native Quercus pedunculata. The Red Oak (Q. rubra) is the most widely distributed in Surrey and the surrounding counties, including Berkshire and Middlesex. The largest specimens I have seen take rank with timber trees, being 50 to 60 feet high, with a trunk 15 to 18 inches in diameter. These are on the Bagshot sands in west Surrey. The species is sparingly used as a street tree in north Surrey. In the same dis-

trict, on the old valley gravel, the Scarlet Oak (Q. coccinea) is planted in greater numbers, but the trees are younger. The largest specimens, about 35 feet high, would seem to have been planted tentatively 10 or 15 years ago; they are of beautiful, pyramidal habit, and colour up well in autumn. One is a Coronation tree. The intensity of colour varies with the individual tree when raised from seeds. One variety has been named Q. coccinea splendens, and this is very handsome. Young trees, at least, retain their leaves for several months during the winter. I was pleased to read the high praise bestowed on the Pin Oak (Q. palustris) by Mr. Frank A Waugh (p. 166). I am more enamoured of it than of Q. coccinea, whether in the green or coloured state, because of its wealth of twiggy branches, and the glossy green leaves polished on both surfaces. The leaf-stalks are long and slender, and the tree as a whole is very graceful. I know of two pyramidal trees, 40 to 45 feet high, on a Surrey common, in open parts of a wood, and they colour splendidly in autumn. All three are also being planted in Berkshire. *J. F.*

FIG. 78.—IRIS SIND-PERS.

PLANT NOTES.

IRIS SIND-PERS.

THIS is one of the most beautiful of Irises flowering in March. In the Cambridge Botanic Garden it does well in front of the houses on a bed which is well drained, and is composed largely of grit. It is a hybrid between two Juno Irises, the tall Iris sindjarensis and the stemless I. persica. The name, it may be remarked, was given by Sir Michael Foster according to his plan of taking the first syllable of each name of the parents. It was raised by C. G. van Tubergen, and is one of the best of his productions. It was described briefly by Sir Michael Foster in the *Gardeners' Chronicle* of April 15, 1899, p. 236, and his concluding remark was that "everyone who sees it will, I am sure, want to possess it." This, indeed, must be the case with anyone who has recently seen it in the Cambridge Botanic Garden, where it opened first in about the first week of March, and continued quite to the end of the month. The general effect of the flower is pale blue, but this is relieved in the case of the falls by a median line of golden-yellow, marked also by small purple dots; the standards, as in all Juno Irises, are small and reflexed. The flower measures nearly 4 inches across. The plant may be regarded as half-way between the two parents, although it is quite dwarf, not growing more than about 6 inches high, while I. sindjarensis attains at least one foot. The leaves are about 6 inches in length, and, like the flower, are intermediate in character between those of the parents. The female parent was I. sindjarensis, and compared with it the flowers are a fuller colour, but they are without the patch of colour at the apex of the fall which forms so conspicuous a feature in Iris persica, the male parent. It is much more easily grown than I. persica, for while I. persica is certain to disappear, this hybrid goes on from year to year indefinitely, and has increased very satisfactorily. *R. Irwin Lynch.*

FLORISTS' FLOWERS.

FREESIAS

AT one time, not so very long ago, the only Freesias in general cultivation were the different forms of F. refracta. The flowers were of various shades of white and yellow. The first step towards other colours in the blossoms of Freesias was the introduction of F. Armstrongii about twenty years ago. This species was sent to Kew by Mr. W. Armstrong, of Port Elizabeth, who found it wild at Humansdorp, Cape Colony. In this species the flower is a shade of rosy-lilac, deeper towards the edges, with a light-coloured throat and a patch of yellow inside. This species, and perhaps others introduced since that time, have in conjunction with the older kinds given us an entirely new race of these beautiful flowers. Now various shades of lavender, lilac, pink, yellow, and a suspicion of purple are to be found among the more recent forms. The first of these coloured kinds to be recognised by the Floral Committee of the Royal Horticultural Society was Tubergenii, said to be the result of a cross between Freesia refracta alba and F. Armstrongii. The variety was given an Award of Merit on March 6, 1906. Just over a year later, namely, on April 16, 1907, a similar award was made to Amethyst, also raised by Mr. Van Tubergen. The first British variety to gain that honour was Rose Queen, which, shown by Messrs. Barr and Sons, was given an Award of Merit on February 23, 1909. Some years previous to that, however, a delightfully coloured hybrid was raised at Kew, and attracted a good deal of attention. It still finds a place in the Kew *Hand-List of Tender Monocotyledons*, where its parentage is given as F. Armstrongii × F. refracta Leichtlinii. While the typical F. Armstrongii possessed little or no fragrance, some of the newer hybrids, owing to the influence of F. refracta, are sweetly scented. The rich yellow flowered F. aurea, for which an Award of Merit was given at the Temple Show of 1902 when shown by Messrs. R. Wallace and Co., does not occur in the Kew *Hand-List*. I am aware that there is some confusion in the white and yellow forms of Freesia, so perhaps this golden kind may be regarded as one of the varieties of F. refracta. As the coloured forms of the Armstrongii race have proved themselves as amenable to cultivation as those of the refracta tribe, we may expect to see still further improvements among them. *W. T.*

The Week's Work.

THE KITCHEN GARDEN.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

TOMATOS.—Give a light top-dressing of loam, a little artificial manure, and frequent applications of weak liquid manure to Tomato plants that are ripening their fruits. Maintain a temperature of 60° to 65°, with sufficient ventilation to keep the atmosphere sweet and buoyant. Stop the plants when a sufficient number of trusses have formed, and remove all side-shoots as they appear. Where it is intended to plant in borders, plants for the main crop should be ready for transferring to their fruiting quarters. Virgin loam should be used when this can be obtained, adding gritty material and a little potash. If the plants are to be grown in pots pay timely attention to their repotting until they are given their final shift, for plants that become pot-bound seldom regain their former vigour. Plants intended for out-door cultivation should be grown on carefully under glass, and hardened later in readiness for planting out in the first week in June.

CUCUMBERS.—The recent inclement weather and absence of sunshine have been unsuitable for Cucumbers, rendering the plants liable to checks unless extra care has been given in ventilating and syringing. These remarks apply especially to plants growing in pits or frames. Fresh fermenting material should be placed round the frames, and the lights covered at night by mats or other protective material. Plants growing in favourable conditions are making rapid progress, and should be given light top-dressings of rich soil before they have covered the bed with much growth. Keep the shoots thinly trained, and stop them at the second or third joint beyond the fruit, according to the space available. Sow more seeds to obtain plants for successional fruiting. Plunge the seed-pots in a mild bottom heat until the seedlings are well through the soil, when they should be placed near to the glass. Prepare fresh beds as advised in the calendar of March 23. Use tepid water for the roots and for syringing; but little syringing will be needed for a few weeks to come.

SPINACH.—Seed of this quick-growing vegetable should be sown every fortnight until the end of May, in deep, rich, friable soil. Thin the seedlings to 3 inches apart, and afterwards to 6 inches. Sow in small quantities, as during dry, hot weather the plants quickly run to seed.

CELERY.—Early Celery plants are ready for pricking out on prepared beds in frames or in boxes, the former method for preference, as then the plants are not so liable to suffer from want of water. The plants may be lifted from frames with splendid roots ready for planting out, and this is the best system of growing them where large quantities are required. Ventilate the frames carefully to harden the plants that they may receive no check when finally planted in the trenches.

THE HARDY FRUIT GARDEN.

By JAS. HUDSON, Head Gardener at Gunnersbury House, Acton, W.

DISBUDDING.—Newly-planted trees on walls should be disbudded in good time; it is better to disbud freshly-planted Peaches and Nectarines than to cut them back severely earlier in the season. In this way good fruit-bearing wood for next season will be secured, as well as short, spur-like growths, which will often set a few fruits when longer ones fail to do so. Trees so treated may not possess quite the same vigour as with a lesser number of shoots, but they will not be nearly so liable to gumming. Watch them closely for the first season, and when short, forerright shoots develop, do not rub them off, but make them into spurs. Watch for the first appearance of green fly, and syringe at once with a solution of liquid Quassia extract. The same treatment can be applied to young wall Plums and wall Cherries. Disbud young Cherry

growths at once; pinch some shoots to encourage young spurs to form where there is room for them. A free use of the finger and thumb, when the shoots are young and sappy, as a means of pruning, is much to be preferred to the use of the knife in later stages of growth. It is more quickly done, and if followed up until the growths are controlled and well regulated, there will be less likelihood of gumming or canker. Apricots, too, may be treated in the same manner. As soon as the young trees are seen to be well established, cease to water quite so liberally, or unduly sappy growths will result. The object of the fruit cultivator should be to bring these young trees into an early fruit bearing condition, rather than to produce strong, exuberant shoots.

PEAR TREES.—This season it does not appear that there will be even an average crop of Pears, and the present time forms an excellent opportunity of thinning out the spurs of Pear trees where they are overcrowded. Some varieties form spurs much more closely together than others. Espalier trained Pears are often overcrowded with weakly spurs.

THE ORCHID HOUSES

By J. COLLIER, Gardener to Sir JEREMIAH COLMAN Bart., Gatton Park, Reigate.

LYCASTE.—Plants of Lycaste Skinneri, L. Balliae, L. Gratrixiae, L. leucantha, L. costata, L. lasioglossa, and L. lanipes develop new growth after they pass out of flower, and the necessary repotting should be done at this stage. Most Lycastes are vigorous-rooting plants and require ample pot room, also a richer and more retentive soil than many other Orchids. Ordinary flower-pots are the most suitable receptacles and for a rooting medium use a mixture consisting of three-parts good fibrous loam, with the smaller particles shaken out, and one part made up of partly decayed Oak leaves, chopped Sphagnum-moss, with a liberal quantity of crushed crocks. Specimens that are pot-bound should be shifted into pots that will be sufficiently large to accommodate them for at least two years. Others that have sufficient rooting space and with compost in good condition should not be repotted, but portions of the old rooting materials may be removed from the surface and replaced by fresh compost. Plants that are in an unsatisfactory condition at the roots, or that are growing in sour compost, should be taken out of their pots, the roots cleansed of the old materials by washing, and the plants potted afresh in small pots. Keep the crown of the plants a little below the rim of the pots in order to provide plenty of space for water, of which Lycastes require liberal supplies, except when resting. After root disturbance water should be applied with extra care until the young roots have grown freely in the new compost. It is advisable to wash the undersides of the leaves occasionally to destroy red spider, a common pest of this Orchid. The plants will thrive in the warmer part of the cool division. Dense shade is not recommended, and the house should be freely ventilated.

SOPHRONITIS GRANDIFLORA.—This Orchid is developing roots from growths which have recently flowered, and plants that require fresh rooting materials should receive attention. Shallow Orchid pans are the most suitable receptacles; they should be provided with plenty of drainage materials, and the compost should consist of Osmunda fibre or A1 fibre and Sphagnum moss. Cut the materials into short portions, as when used in a coarse state the rhizome retains the moisture too long. The plants thrive in the cool Odontoglossum house suspended from the roof, or they will grow equally well on the stage if arranged close to the roof-glass. Afford the roots plenty of water while they are active, but when the plants are at rest give only sufficient moisture to keep the pseudo bulbs plump.

SPATHOGLOTTIS.—Plants of Spathoglottis that were not repotted last year should be attended to in that respect as they start into growth. Fairly deep pans, or ordinary flower pots, form the best receptacles, and a compost similar to that recommended for Lycastes is suitable. These plants require a warm temperature, and should be well shaded during bright days. A liberal supply of water is needed by the roots, but the amount should be gradually diminished as the pseudo bulbs reach maturity, and entirely withheld for a few weeks during the winter months. The foliage should be frequently sprayed in order to destroy thrip and red spider, which sometimes attacks the under-surface of the leaves.

FRUITS UNDER GLASS.

By W. J. GUISE Gardener to MRS. DEMPSTER, Keele Hall, Newcastle, Staffordshire.

THE ORCHARD HOUSE.—Trees of Apricot, Plum, Pear, Peach, Nectarine and Cherry growing together here in the same house have set their fruits, and all promise to produce good crops. This I attribute to the use of a little warmth in the hot-water pipes at night, which is very necessary in cold, damp districts. Two rows of pipes (flow and return) are sufficient for these fruit houses, the cost of fuel, even in these times of high prices, being very small. A temperature of 45° to 50° through the night, and 60° by day is suitable for mixed fruit houses. Air should be admitted when the thermometer registers 60°, and the amount gradually increased as the temperature rises, until it reaches 80°, for much as these trees require fresh air, they must be protected from winds and draughts. Maintain a moist atmosphere by syringing the trees twice daily with tepid water, except in dull, cold weather. Keep pot trees moist at the roots by judicious watering. When the fruit is swelling the roots may be given stimulants in a weak state twice weekly until the stoning period, and then on every other day. Weak liquid manure, guano, soot and lime water used alternately will supply all the food necessary for the proper development of both fruit and wood. Robust trees require daily attention as to regulating and pinching the shoots, not only to prevent waste of energy, but also to keep them of even growth. If the house can well be ventilated the trees can be left out. Very little aphis may be present, but it is astonishing how rapidly this pest spreads on Cherries, Plums, Peaches and Nectarines. Light attacks can be checked by spraying with Quassia Extract or dusting tobacco powder on the shoots, but badly infested houses should be fumigated, and the fumigation should be repeated if necessary. Choose a mild still night for fumigating, and let the foliage be dry. Make the house as air-tight as possible to retain the fumes.

LATE PEACHES AND NECTARINES. All the latest trees of Peach and Nectarine have set their fruits, and the syringe may be used freely on bright days. Examine the borders, and if dry afford copious supplies of clear water. Short stable manure spread over the borders will assist the trees at this stage, and prevent rapid evaporation of moisture. Disbudding and tying in, with a little thinning of the fruit, will require frequent attention, but the work must be done gradually. These late trees do not usually cast their fruit if they are properly managed, still it is advisable to make allowance by leaving sufficient for a final thinning at or near the stoning period. Even late houses must be carefully ventilated and cold draughts prevented.

PLANTS UNDER GLASS.

By E. HARRISS, Gardener to Lady WANTAGE, Lockinge Park, Berkshire.

GLORIOSA SUPERBA.—The flowers of this stove climbing plant are useful for decorative purposes. Two or three plants trained thinly over the roof of the stove or any other warm house will furnish a plentiful supply of flowers through the summer and early autumn. Water carefully plants which were started into growth last month until their growth has made considerable progress. When well established the roots should be given a stimulant. Diluted liquid manure from the farmyard and soot water may be used about twice a week. Gloriosas when in active growth require plenty of warmth and a moist atmosphere. The sun's heat should be made full use of in preference to much fire-heat. Give timely attention to the training of the young growths or they will become hopelessly entangled.

RHODODENDRON INDICUM (INDIAN AZALEA). Remove the dead flowers from Indian Azaleas when their blooming is over, and repot or top dress the roots as their requirements demand. Grow the plants in a house having a warm, moist atmosphere until they have ripened their shoots. A compost of fibrous loam and peat in equal parts, some leaf-mould, and coarse sand, forms a suitable rooting medium for these plants. See that the pots are efficiently drained, and afford water with great care till the roots have become established. Examine the foliage carefully for red spider, and should there be evidence of this pest lay the plants on their sides and drench them with an insecticide. When growth is completed stand the plants out of-doors in a sheltered situation and allow them to remain in the open until there is danger of frost in the autumn.

COLEUS THYRSOIDEUS.—If cuttings of Coleus thyrsoidens are available insert them without delay, as a long season of growth is required to make good plants. Prepare a finely-sifted compost of loam, peat, leaf mould, and sharp sand. The cuttings are best rooted in small pots, and it is important that the receptacles be plunged in a hot-bed until roots develop. When the cuttings are rooted place them on a shelf near the roof-glass in a house having a moist, warm atmosphere. When they are sufficiently well rooted pot them singly in 3½-inch pots, and stop the leading shoots when they are about 6 inches high to induce others to break from the base. About three or four shoots should be retained to form a good specimen. At a later stage shift the plants into 5-inch pots, using the same kind of compost as before, but passed through a coarse sieve. For the final potting use 7-inch or 8-inch pots. Another batch of cuttings rooted in a few weeks' time will furnish plants for flowering in small pots. Seedlings of this Coleus raised from seed sown early in March require similar treatment.

THE FLOWER GARDEN.

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

PERPETUAL-FLOWERING CARNATIONS.—Old plants of Perpetual flowering Carnations may be planted in borders or beds at any time now, and the sooner the better. The soil can scarcely be made too firm about the roots, and a very shallow basin should be left round each plant for the reception of water. It is a good plan to water the plants at regular intervals, always on the same days of the week, until root action has commenced, for if the balls once become dry it is almost impossible to moisten them again unless hot water is used, and drought at the roots will be followed by a yellowing of foliage, which renders the plants unsightly. Unless the stakes are very strong and intact when the plants are set out, one new, strong stake should be placed to each Carnation and the stems securely fastened to it. This support will usually suffice for the season.

STOCKS.—If the ground is ready for the reception of East Lothian Stocks they should be planted forthwith, the soil having been previously enriched with a dressing of decayed cow manure. Those prepared in boxes require careful handling to preserve a ball of soil with the roots, which is necessary to the satisfactory establishment of the plants. Stocks repay frequent watering until root-action has become vigorous.

GLADIOLUS.—This is the period when most Gladioli are planted (at any rate in the North) from the pots or boxes in which they have been forwarded under glass. The newer hybrid bedding varieties do not require this treatment, and they succeed well if planted much earlier in the year.

BEDDING PLANTS.—Houses may now be cleared of the more tender bedding plants, and these may be transferred to cold frames, where they should remain until danger of cold winds is past. Lobelias growing freely will require the tips of the little shoots taken off, and Ageratums should be pinched to keep them stocky. Should there be indications of exhaustion of soil, slight manurial additions should be made to the water when moisture is required.

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APPOINTMENTS FOR MAY.

SATURDAY, MAY 4
Nat. Auricula Soc. (Northern Section) Ann. Ex., Manchester.

TUESDAY, MAY 7—
Roy. Hort. Soc.'s Comm. meet. Scot. Hort. Assoc. meet.

THURSDAY, MAY 9
Manchester and N. of England Orchid Soc. Ann. Meeting.

TUESDAY, MAY 28
Roy. Hort. Soc.'s Comm. meet.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 49.2.

ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, *Thursday*, April 25, 10 A.M., Temp. 51.0°, Weather Dull.

The Chemical Life History of the Potato.

Messrs. J. T. Ramsay and W. C. Robertson, of the Department of Agriculture, Victoria, Australia, have published* the results of an inquiry into the composition of the Potato plant at various stages of its development. Their object was to ascertain the rate at which the plant absorbs food from the soil and the relative proportions of each of the principal "elements" (nitrogen, phosphoric acid, and potash) contained in the plant at various stages of growth. The results are interesting, and of practical value.

In order to obtain them, the authors made complete analyses of set, haulm, root and tuber at four stages of the life-history of the Potato, and at intervals of 33, 25, 31 and 35 days—that is, roughly, at the end of the 1st, 2nd, 3rd, and 4th (last) month of growth.

The first point of interest which appears from these analyses is that 41 per cent. of the total *root growth* is completed during the first month. In the second month the plant performs 52 per cent. of its root-growth, and at the end of that period root-growth is practically complete.

During these two periods the haulm makes 22.5 per cent. of its total growth in the first month and 49.8 per cent. during the second. In the third month the root ceases almost entirely to grow, but the haulm makes 27.7 per cent., practically finishing its growth within three months.

The authors rightly point out that this active and precocious root-development indicates that soluble food substances must, if they are to contribute to the essential and considerable root-growth which takes place in the first month, be available from the start. Herein lies the justification of supplying sulphate of ammonia and super phosphate of lime before or at the time of sowing, and it would appear to follow that the practice of withholding the sulphate of ammonia until the time of the first earthing up is not to be recommended.

Analysis of the sets shows that much of the nitrogen and phosphoric acid which they contain is drained away from them to the growing plant, and assists in building up root and haulm, but the potash contained in the set remains there, and does not apparently pass into the growing plant, but finds its way ultimately into the soil. The potash absorbed by the roots accumulates for a time in the haulm, but later on passes to the tuber, where it, as is well known, plays an important but obscure part in facilitating the accumulation of starch in the tuber.

The second month of growth sees a great accumulation of nitrogen, phosphoric acid, and potash in the haulm. The nitrogen increases from 62.9 lbs. (per acre of haulm) at the end of the first month, to 164.2 at the end of the second; the phosphoric acid increases from 13.3 to 39 lbs., and the potash from 91.7 to 261.7. During the following month—the third—these materials begin to migrate to the young tubers, and as a result there is a falling off in nitrogen in the haulm (from 164.2 lbs. per acre of haulm to 143.3), and a falling off in phosphoric acid (from 39 to 20.9). The potash in the haulm shows a slight increase—from 261.7 lbs. per acre of haulm to 265.7, but the lime in the haulm, on the other hand, shows a steady and continuous rise—22.1 lbs. in the first month, 68 lbs. in the second, 126.5 in the third, and 131.4 at the end of the fourth month.

No less interesting is the amount of food removed by the plant and the amount returned by the haulm. A 10-ton crop of tubers contains about 2 tons of dry matter, and the haulm of such a crop 1 ton of dry matter. The amount of food contained in the haulm per acre is 45 lbs. of nitrogen, 7 lbs. of phosphoric acid, 84 lbs. of potash, and 51 lbs. of lime (and 25 lbs. of magnesia), plus a little less than a ton of organic matter.

The tubers of the crop receive from an acre of land 81 lbs. of nitrogen, 31 lbs. of phosphoric acid, and 144 lbs. of potash; that is, the equivalent of a dressing of 4 cwt. of sulphate of ammonia, 1¼ cwt. of superphosphate, and 3 cwt. of sulphate of potash.

The authors conclude by drawing attention to the high manurial value of the Potato haulm. One ton of haulm supplies three times as much nitrogen and phosphoric acid, and approximately ten times as much potash, as 1 ton of farmyard manure. The large demand of the Potato for potash is illustrated by the fact that during the growing period it utilises phosphoric acid, nitrogen, and potash in the ratio of 1, 4 and 6.

* *Journ. of the Dept. of Agric.*, Victoria, XV., ii.

THE ROYAL PARKS.—On the vote of £57,000 for expenses in connection with the public Royal parks and pleasure grounds of London on the 18th inst., complaints were made in Parliament of the way in which the parks had been disfigured by the erection therein of temporary buildings. Sir J. BOYTON declared that the whole inner circle of Regent's Park was a stable for motor-lorries, and the amenities of the park had been entirely destroyed. Sir ALFRED MOND, the First Commissioner of Works, said he sympathised very heartily with what had been said with regard to the condition of the parks. He was not responsible for the buildings which had been put up in Regent's Park, but he would limit the erection of further buildings in the parks so far as he could. It was certainly undesirable that any further part of St. James's Park should be utilised for buildings.

MEMORIAL TO MISS ETHEL SARGANT.—The Council of Girton College has decided to endeavour to raise a sum of money with which to found a scholarship for the encouragement of research in botany, as a memorial of Miss ETHEL SARGANT, whose original contributions to botany gained for her a prominent and honourable position in the scientific world. Miss SARGANT was not only an original investigator of great ability, but she also consistently advocated the importance of providing opportunities of research for others. She was the first woman to preside over a section of the British Association and to serve on the Council of the Linnean Society. Subscriptions may be sent to Miss E. LAWDER, 25, Halifax Road, Cambridge.

CELERY LEAF BLIGHT.—Celery leaf blight disease is often carried in the "seed," and growers are advised to disinfect their seed with a solution of hydrogen peroxide known commercially as 20-volume solution, but if that cannot be obtained a 10-volume solution may be used. The seed to be treated should be placed in a glass or earthern vessel and enough of the hydrogen peroxide poured into it to cover the seed completely. Allow the seeds to remain in the liquid for three hours, and then pour the liquid off and use it a second time if required. Spread the seed in a thin layer in the air before sowing. Do not return the seed so treated to the original packets, as spores of the fungus causing the disease may be adhering to the paper of the packets and thus re-infect the seeds. If the plants become infected at a later stage spray with Bordeaux or Burgundy mixture.

THE GRAPERIES OF BAILLEUL.—An incident of the fierce fighting around Bailleul, described in Mr. PERCIVAL PHILLIPS' despatch in the *Daily Express*, was the destruction of the famous graperies which supplied the London market for a number of years. The black Grapes of the Bailleul district were at one time almost the only Grapes we received from France. But we have not had any of these Bailleul Grapes in London for a long time. For several years before the war they all went to the Paris market. Another battlefield, Waterloo, used to send its famous black Grapes to London. Paris was formerly the market for these Belgian Grapes, but in consequence of a tariff imposed by the French they were sent to Covent Garden.

REGISTRATION OF DAFFODIL NAMES.—At the meeting of the Royal Horticultural Society on Tuesday, April 9, the President and Council adopted a recommendation of the Society's Narcissus Committee that Regulation 3 for the registration of Daffodil names be suspended *sine die* as from August 1, 1914. Regulation 3 reads as follows: "If flowers of plants registered be not exhibited for confirmation of name at one of the R.H.S. meetings within a period of five years from the date of registration, the registration will lapse, and the name having been erased from the Society's list will again become free for adoption."

A VETERAN AHUACATE TREE.

THE Ahuacate (Persea gratissima), known in English-speaking countries under a number of different names, but most commonly as Avocado and Avocado Pear, has, since the remotest antiquity, been a great favourite with the Mexicans. Some of the earliest historians record having found the tree in the dooryards of the Aztecs, and the fruit was a staple food product with them. The town of Ahuacatlan takes its name from this fruit, *tlan* being the Aztec place termination. To-day the Ahuacate is no less highly valued by the natives than it was in the time of Columbus, and in many districts it is to be found in immense numbers.

The tree shown in the illustration is growing near the village of Atlixco, in the State of Puebla directly at the foot of the great volcano Popocatepetl, and at an altitude of over 6,000 feet where freezing temperatures occur almost every winter. The owner of this tree, when questioned as to its age, merely replied that it was "muy anciano." "Is it one hundred years old?" "Yes. Some much more than that." "Two hundred years?" "Yes. Some fully that much." The trunk is over 4 feet in diameter, and despite its old age the tree is still vigorous and produces annually about three thousand fruits. An idea of the sizes of these fruits can be gained from those shown in the hand of the owner; they weigh almost one pound each. The fruit is in great demand among the natives, and in order to prevent its being stolen it is picked a month or six weeks before fully mature, and placed in the house to ripen. In this way it softens sufficiently to be eatable, but is far from being as good as when allowed to attain full maturity on the tree. The natives gather the fruits in a very crude manner, prying them off the tree with a long pole provided with a hooked wire on one end, and allowing them to drop to the ground. When picking from the uppermost branches, some fifty feet above the ground, it is not hard to see that it requires a fruit of extraordinary strength of skin and solidity of flesh to stand the terrific jolt to which it is subjected. Some of the Mexican and Central American Ahuacates are remarkable in this respect having a skin so thick and woody that it could almost be called a shell. *E. W. D'yer.*

FIG. 79.—PERSEA GRATISSIMA IN SOUTHERN MEXICO.

HOME CORRESPONDENCE.

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

ANEMONE PULSATILLA.—In confirmation of the remarks of Mr. W. P. Dykes on p. 165, I should like to say that here I have found Anemone Pulsatilla very variable in colour. Some flowers are very dark purple, others more mauve. Seedlings raised from the former colour invariably produce a large percentage of the latter. They thrive and do well here on W. shire even on a herbaceous border, although, of course, they seem much more at home on the rockery. *R. H.*

SCARCITY OF PEAR BLOOM (see p. 170).—It seems difficult to provide any theory which will explain the condition of Pear trees this year. The trees generally are remarkable for the absence of bloom, and this fact, taken in connection with the abundant crops of last year, tempts one to agree with the old theory that a heavy cropping season is almost necessarily followed by a more or less fruitless one. The evidence, however, is conflicting. In some districts trees which cropped heavily last year, and those which bore few or no fruits, are now alike deficient in blossom. In others there is abundant promise of a full crop. Thus we find divergencies even in trees which bore heavily last year. In my own garden, for instance, there are two large trees, growing side by side, which bore heavy crops last year. One, a Williams' Bon Chrétien, is white with bloom, while the other, a late variety, not identified, has only two trusses. It may be suggested that Williams' Bon Chrétien, having been relieved of its fruits sooner than the late tree, had sufficient time to recover from the strain of fruit production and flower again. But the instance quoted is far from being an isolated one. In gardens around Taplow, Maidenhead, and alongside the G. W. Railway main line at Hanwell, Southall, and West Drayton, many large Pear trees which bore heavy crops last year are now smothered in blossom. The profusion of bloom on nearly every Plum tree in Isleworth and Hounslow, which bore such heavy crops last year that many branches were broken down by the weight of fruit, decidedly refutes the theory that a fruitful season is followed by a year of scarcity. *A. C. Bartlett, The Orchard, Uxbridge Road, Hampton.*

My experience agrees with that of Mr. Beckett in a somewhat modified degree. Every year at this season a large winter Pear in my garden is one mass of white blossom, but the crop varies considerably. In 1914, and again last year, it was very large, but in the intervening and the two years previous to 1914 the yield was very small. Within a few yards of my Pear tree there is in the adjoining garden an early Pear, less than half the height of mine, which never fails to produce a good crop, and this year was as usual one sheet of white blossom just before the cold spell of the last week or two. My tree usually comes into flower later than my neighbour's, so I am hoping it may yet flower under the influence of warm sun, but a crop of fruit like that of last autumn is past hope. *W. Roberts, 18, King's Avenue, Clapham Park, S.W.*

—I do not think Mr. Beckett will be alone in his experience this year. I have never had less bloom on my Pears since I replanted my wall twelve years ago. This scarcity is especially noticeable on trees growing on walls. I partly account for this by the heavy crop taken last year, but this is not so in all cases. Trees that only gave me a few fruits last year are equally bare of bloom; yet the bush trees growing by the path in the garden are mostly showing plenty of bloom, as also are cordons planted fifteen months ago. Apples, on the other hand, give every promise of an abundant crop. This I am surprised to find, after the heavy crops taken last year. Even varieties that bear more or less every other year are showing well for bloom. Plums, Apricots, Peaches, and all bush fruits are most promising. *T. Pateman, Node Gardens, Welwyn, Herts.*

Here in these gardens, and in the locality generally as far as I can see, scarcity of Pear bloom is general. Williams' Bon Chrétien and Pitmaston Duchess, however, are exceptions to the rule, as they are bearing quite a wealth of bloom; but others, e.g., Doyenné du Comice, Louise Bonne of Jersey, and several of the Beurrés have scarcely any blossoms. One hardly

knows to what extent even the little bloom they now have may be damaged, seeing that on the 18th and 19th of April we had 19 and 9 degrees of frost respectively, on the latter date after a fall of snow. On subsequent examination I found all blooms frozen stiff, and many were ruined. Plums and Damsons are splendid everywhere, but possibly we shall hear of great damage in the next issue of the *Chronicle*. Here we had a quantity of snow on the 16th, enough to give the country around quite an Arctic appearance. *R. H. Legg, Melksham House Gardens, Wilts.*

WEATHER RECORDS.—Will those interested in the relation between garden or field culture and weather variations, assist in the work carried out over some forty years by the Royal Meteorological Society, and, since 1890, on a uniform plan initiated by the late Edward Mawley in the annual reports on phenological observations? Their value grows with the years, but from the first the cry has risen for more observers, particularly throughout Wales, Scotland, and Ireland. The accompanying map exhibits this paucity; also, however, the fascinating floral march across the land by the isophenes, or lines of equal flowering date, counting January 1 as 1. Hence 120 stands for April 30. In the parts named especially, but also all over, we are anxious to enrol fresh observers for the 13 common wild flower, 6 bird, and 5 insect records. I shall be most pleased to send the necessary forms and instructions. Among earlier observations are the first appearance of Coltsfoot, Anemone, Blackthorn, swallow, honey bee (visiting flowers). Any migrant records are valued. *J. Edmund Clark, Asgarth, Riddlesdown Road, Purley, Surrey.*

EARLY-FLOWERING SHRUBS (see pp. 112, 130, 141, 150).—Both Prunus Pissartii and Forsythias have flowered in South-west Scotland with more than usual freedom this spring. P. Pissartii has been charming, and Forsythia intermedia, F. Fortunei, and F. densiflora have been unusually floriferous. *S. Arnott, Maxwelltown, Dumfriesshire.*

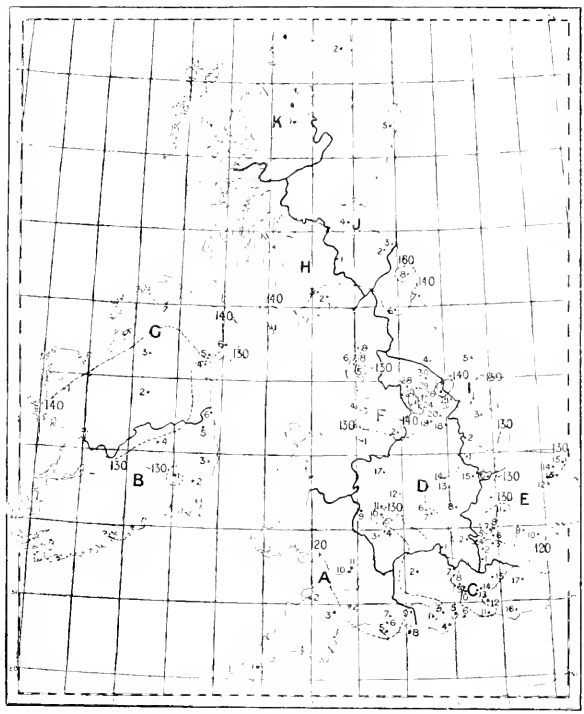

FIG. 80.—PHENOLOGICAL STATIONS, 1916. ALSO ISOPHENES OF 120, 130, 140 AND 160 DAYS FOR 1916.

SOCIETIES.

ROYAL HORTICULTURAL.

APRIL 23.—The weather on Tuesday last was about as wet as could be imagined; at Westminster there was an all-pervasive darkness and dampness, at once depressing to the spirits, and so gloomy as to prevent anyone from properly appreciating the delightful colouring of the new Orchids and Daffodils on exhibition at the Drill Hall. Both these classes of flowers were well represented, and there was also a fine collection of Himalayan and other Rhododendrons, various Alpine and other early spring flowers, and Auriculas and Primulas.

The Fruit and Vegetable Committee had very little work to do. The Floral Committee recommended one Award of Merit and awarded a few medals. The Orchid Committee considered several novelties. The Narcissus and Tulip Committee recommended three Awards of Merit and five medals. This Committee awarded the Engleheart Cup to Messrs. HERBERT CHAPMAN, LTD., for the best dozen Daffodils not in commerce; there were four entries. The Peter Barr Memorial Cup was awarded to Miss WILLMOTT, V.M.H., Warley Place, Great Warley, for the year ensuing, as an acknowledgment of the good work this lady has done in popularising Daffodils.

Floral Committee.

Present: Messrs. Henry B. May (in the chair), Sydney Morris, John Green, R. W. Wallace, John Heal, J. F. McLeod, Geo. Harrow, C. R. Fielder, E. F. Hazelton, G. Renthe, W. Howe, H. Cowley, Thos. Stevenson, W. H. Page, Arthur Turner, Chas. Dixon, John Dickson, Chas. E. Pearson, W. P. Thomson, E. H. Jenkins, Geo. Paul, J. W. Barr, W. B. Cranfield, H. J. Jones, and W. G. Baker.

AWARD OF MERIT.

Daphne rupestris grandiflora.—A dainty little shrub of lowly Alpine growth, with short, closely set leaves and sweetly scented deep rose-pink flower of larger size than found in the usual form. From Messrs. R. TUCKER AND SONS, Oxford.

GROUPS.

Messrs. R. GILL AND SONS showed delightful Rhododendrons, especially the rich-hued Norman Gill, Gill's Crimson, the clusters of R. Nuttallii, R. campyloglossum, and the fine R. Falconeri. (Silver Flora Medal.)

Messrs. R. TUCKER AND SONS showed a large-flowered form of Daphne rupestris, the fragrant Viburnum Carlesii and Androsace pyrenaica.

Messrs. FELTON AND SONS showed some vases of charming Roses and of Double Gerbera. (Bronze Banksian Medal.)

Messrs. B. R. CANT AND SONS contributed Roses in fine form, their A. Hartmann, Emily Gray and Golden Ophelia being prominent. (Silver Flora Medal.)

Mr. GEORGE PRINCE also exhibited Roses, his group including Yellow Banksian bending over larger flowered varieties in low vases. (Silver Banksian Medal.)

Messrs. H. B. MAY AND SONS showed Ferns. (Silver Banksian Medal.)

Mr. G. REUTHE and Mr. G. W. MILLER showed hardy flowers. (Bronze Banksian Medals.)

Orchid Committee.

Present: Sir Jeremiah Colman, Bart. (in the chair), Sir Harry J. Veitch, Messrs. Jas. O'Brien (hon. secretary), R. A. Rolfe, R. G. Thwaites, Fred. K. Sander, T. Armstrong, A. McLean, J. Charlesworth, J. E. Shill, W. H. White, Walter Cobb, Frederick J. Hanbury, C. J. Lucas, R. Brooman White, and W. J. Kaye.

AWARDS.

FIRST CLASS CERTIFICATE.

Brasso Cattleya Princess Mary (*B.-C. Digbyano-Schroderae* × *C. chocoensis alba*), from Messrs. FLORY AND BLACK, Slough. A very handsome and distinct hybrid, partaking much of the fine form of C. Schroderae, but broader in all its parts and of fine substance. The broad sepals and petals are white with a slight blush tint on the reverse side, the fine circular-fronted fringed lip white, with rich orange disc and throat to the tube.

AWARD OF MERIT.

Odontioda Joan var. Rochampton (*Oda. Charlesworthii* × *Odm. ardentissimum*), from Dr. MIGUEL LACROZE, Brymdr, Roehampton (Orchid grower Miss Robertson). An ideal flower, of large size, perfect shape, and remarkably intense dark colour. The broad sepals and petals were entirely rich claret colour, with a dark maroon shade and a very slight white margin.

PRELIMINARY COMMENDATIONS.

Odontoglossum Miguelito (*Dora* × *Doris magnificum*), from Dr. MIGUEL LACROZE. A charming seedling, bearing one large claret-coloured flower of fine shape and substance, the outer parts of the segments being white and other slight white markings appearing between the large blotches.

Odontoglossum General Foch (*Armstrongiae* × *Colossus*), from Messrs. ARMSTRONG AND BROWN, Orchidhurst, Tunbridge Wells. A good result in fixing blue and violet colours, for which Messrs. Armstrong and Brown have made successful endeavours. The flower borne by the seedling plant was 3½ inches across, the ground colour white, with the greater part of the surface of the sepals violet, the fringed petals bearing numerous irregular violet blotches. Lip ample, white, with violet blotches in front of the crest, which constitutes a distinct feature, as the blotching of the lip is usually brown or red, and not coloured like the petals as in this seedling.

GROUPS.

H. T. PITT, Esq., Rosslyn, Stamford Hill (gr. Mr. Thurgood), was awarded a Silver Flora Medal for an effective group, in which were a good selection of Miltonias, including a fine specimen of M. vexillaria Memoria G. D. Owen, with four spikes bearing together 17 flowers. Among the Odontoglossums were the fine O. Hallii King Edward VII., O. crispum Snow Queen, O. c. Oakwood Ruby, and other rare forms.

Dr. MIGUEL LACROZE, Roehampton, showed two good novelties in Brasso-Cattleya Beaumont

B. C. Chittoni magnificum, C. Empress Frederick, a good blush-white flower with greenish-yellow disc to the lips; and Odontioglossum Catanaroa Sceptrum, Fascinator, primrose-yellow with dark spotting.

Messrs. ARMSTRONG AND BROWN were awarded a Silver Flora Medal for a very fine group containing a selection of new hybrid Odontioglossums, among which Odm. Bullecourt, O. eximium Xanthotes and other white forms were conspicuous. Among the showy Odontiodas, Oda. Henryi, with a rich spike of cinnabar red flowers, was the most attractive.

Messrs. CHARLESWORTH AND CO. were awarded a Silver Flora Medal for a group of fine Odontoglossums, Odontiodas, Laelio-Cattleyas, etc., with well-flowered white Dendrobium Infundibulum and D. Lamellianum.

Messrs. STUART LOW AND CO., Jarvisbrook, Sussex, were awarded a silver Banksian Medal for an attractive group, principally hybrids, the new forms being L.-C. Marcia, L.-C. Mrs. J. Schroder, a pretty pure cowslip-yellow flower, and L.-C. Semia, L.-C. Fetonia, C. Schroderiana, formed like C. Schroderæ, blush white, with orange disc. Fine specimens of L.-C. eximia, with fine flowers, L.-C. Dominiana, and the white Brassocattleya Queen Alexandra with four flowers, were also shown.

Messrs. C. F. WATERS, Balcombe, were awarded a Bronze Banksian Medal for a selection of well-flowered exhibit Dendrobiums, including a good white form of D. Ainsworthii, and the richly-coloured D. splendidissimum var. Mrs. Haywood.

Mr. J. E. SHILL, The Dell Gardens, Englefield Green, showed a splendid plant of Odontioda Duchess, with a branched spike of many well-formed flowers, handsomely blotched with bright red on a blush-white ground.

Messrs. FLORY AND BLACK, Slough, showed their new seedling Cattleya Peter Hardyana × Venus, nearest to C. Hardyana, and with yellow sepals and petals tinged with rose, the rose-mauve lip having the gold lines of C. Dowiana aurea and the yellow patches on each side of the lip as in C. Warscewiczii, one of the parents of C. Hardyana.

Narcissus and Tulip Committee.

Present: Mr. E. A. Bowles (in the chair), Miss E. W. Ingott, Rev. J. Jacob, Messrs. P. R. Barr, W. Poupart, F. H. Chapman, Horace Smith, W. B. Crisfield, Francis Boyd, Richard R. Wallace, W. F. M. Copeland, G. Reuthe, G. W. Leak, E. D. Pearson, and Chas. H. Curtis (hon. sec.).

AWARDS OF MERIT.

Narcissus Glowing Bowl.—A beautiful and greatly admired Daffodil with a white perianth of excellent form. The crown of yellow hue has a deep, frilled rim of vivid mandarin red. This belongs to the Barrii class, though a three-quarter bred poeticus. From Messrs. HERBERT CHAPMAN, LTD., Rye, Sussex.

Narcissus Miss E. M. Boarding.—A very dainty Giant Leedsii variety with faultless white perianth segments and a frilled Apricot-tinted pink-flushed trumpet. This is not a large flower, but so beautiful and well balanced as to attract considerable attention. From Mr. W. B. CRANSFIELD, Enfield Chase, Middlesex.

Narcissus Spalding Queenie (*N. poeticus ornatus plenus*).—A beautiful double white form of the popular N. ornatus, and particularly useful for market purposes and florists' use. It gained an Award of Merit as a show flower in May, 1917, and on the present occasion was granted a similar award as a market variety. From Messrs. F. CHIPPIN AND SON, Narcissus Gardens, Spalding.

GROUPS.

Mr. A. ROBINSON, Doncaster, is a new exhibitor at Westminster; he showed a great variety of Daffodils, amongst which were Orangeman, Mrs. J. H. Veitch, Cœur de Lion, Firebrand, and Croesus.

Messrs. HERBERT CHAPMAN, LTD., displayed a fine lot of poeticus forms and such brilliant varieties as Torso, Crimson Braid, Whitewell, and Débutante. (Silver-gilt Banksian Medal.) In their exhibit, which won for them the Engleheart Cup, this firm showed Bardmaster and Nell Gwynne in capital condition.

Major CHURCHER, Alverstoke, showed Will Scarlet, Red Beacon, and Gipsy Queen in good form.

Mr. W. F. M. COPELAND'S group included the handsome double Mary Copeland and the still more double Mrs. Maurice Malcolm, with many dainty seedlings representing other sections.

Messrs. BARR AND SONS had the best Daffodil display, and gained a Silver-gilt Flora Medal for their clean, bright flowers; Dolores, Red Beacon, Pyrrha, Ruby (finely formed), Cossack, Elvira, and Radiant were a few of the finer flowers in this group.

Fruit and Vegetable Committee.

Present: Messrs. Joseph Cheal (in the chair), H. Markham, P. D. Tuckett, J. C. Allgrove, Edwin Beckett, F. Jordan, E. Harriss, E. A. Bunyard, F. G. Tressider, W. H. Divers, A. Bullock, Geo. P. Berry, A. R. Allan and W. Wilks.

A few seedling and other Apples were placed before this Committee, but there were no other exhibits, and no awards were made.

NATIONAL AURICULA AND PRIMULA.

APRIL 23.—War conditions and weather conditions combined to make this society's exhibition, held in connection with the Royal Horticultural Society's meeting, a somewhat poor one. In many classes there were no entries and in others only one. Some of the flowers shown were quite good, but there was an entire absence of enthusiasm, and very few Auricula lovers were present.

Mr. J. T. BENNETT POE was the only exhibitor of two stage Auriculas. Mr. J. L. Gibson showed the finely-edged Auricula a good plant of Marmion, which gained a 1st Prize. For four show Auriculas Mr. Gibson gained first place, and showed, among others, a fine violet self-coloured variety.

Mr. BENNETT POE was first and second for six Alpine Auriculas, and showed Hero of Hyde in each case. Mr. J. L. Gibson had in the class Lucy, Alpine Auricula raised by Bennett Poe, Stephen Berry, Dwight, Guide Helper, Mrs. Jas. Douglas, and Prime Minister. Mr. H. W. Mason was placed second. Mr. Gibson was also awarded 1st Prize for six fancy Auriculas, showing Good Work, Kate Nicholson and some good seedlings.

The 1st Prize in a second class for six Alpine Auriculas was won by Mr. J. T. BENNETT POE with Golden Dustman, Duke of York, Argus, Dean Hole, Rosy Morn and J. T. Bennett Poe. For four Alpine Auriculas Mr. J. L. Gibson, Belmont, Surrey, won the first place for a good set, and was followed in order by Mr. J. T. BENNETT POE and Mr. H. W. MASON, Barstead.

Mr. G. W. MILLER, Wisbech, secured the 1st Prize for a collection of Primulas and Auriculas, and had no competitors. The best dozen Polyanthuses also came from Mr. G. W. Miller, who won the 1st Prize for a specimen Polyanthus, for a dozen Primroses and for six Primroses, the colours of the flowers in those classes being bright and varied.

CROPS AND STOCK ON THE HOME FARM.

VETCHES FOR HORSES AND COWS.

VETCHES are very useful for providing green food of an appetising nature for horses in August and September when they are doing extra work during harvest. Cows, too, appreciate them, and so do pigs, especially when they are podded. Two bushels of seed per acre, with half a bushel of Oats, should be sown broadcast on deeply ploughed land that may have produced a crop of roots during the winter. Manure freshly applied is not absolutely necessary. Harrow the ground well after sowing, and see that birds do not rob the seed.

Winter Vetches intended for sheep food, hay or seed, should be rolled without delay, especially in light soil, as recent frosts have loosened the surface. If it is not soon made firm again by the roller red rust may affect the growth.

MAIZE.

Cowkeepers who have not hitherto grown Maize as green food for their cows are realising its advantages in increasing the milk supply during August, September and October.

The second or third week in May is quite soon enough to sow the seed. If sown earlier in stiff soil, which is liable to be cold and wet, the seed rots; or the growth may be injured by late frost. Plough the land deeply, working it down to a fine filth, so that when ploughed again for sowing the fine surface soil will fall on the seed. This should be sown thinly in the furrow behind the plough, the furrow being, say, 3 inches deep. This is better than drilling the seed, as with the latter method some of it is sure not to be buried more than an inch deep. Rooks quickly find such stray seeds, and harrow for more, often spoiling the whole plot.

If the land was not previously manured, scatter in the furrow some superphosphate. The seed need not be sown closer than 3 inches apart.

TRIFOLIUM INCARNATUM.

sown last August or early in September to provide cattle food in May and June, is progressing favourably on well-enriched land. Liberal cultural conditions in regard to manure and thorough preparation are a great advantage. Plots that are not making satisfactory growth should be aided by a dressing of sulphate of ammonia sown over during dry weather at the rate of 1 cwt. per acre.

MANGOLD.

Now is the time to make final preparation for the sowing of Mangolds. The value of this root is well known. It may form the staple food for dairy cows from November until the middle of May. For sheep Mangolds can be used during the lambing period in February, and from then onwards until August. For horses they can be used daily from January until May, or later; and for pigs all the year round.

The best preparation for this crop is farmyard manure, ploughed in in November at the rate of 20 tons per acre, followed by 3 cwt. superphosphate in the spring, previous to sowing. The various manure merchants prepare a concentrated form of manure for this crop which saves the labour and expense of carting farmyard manure. Agricultural salt is beneficial, especially on light soil, as it conserves the moisture in the soil; 1 cwt. salt sown over the plot ten days before sowing the seed, and 5 cwt. superphosphate per acre will be sufficient, provided the soil has been well manipulated and is fairly free from weeds. Sulphate of ammonia sown evenly over the land at the rate of 1 cwt. per acre after thinning the plants is of great assistance to this crop. No time should be lost in getting in the manures to be applied, as delay in delivery may occur.

Manure can be applied with the seed in the drill, but it is better to sow broadcast, whatever the kind. Manure sown in the drill with the seed is liable to check the early growth; by distributing it over the plot it is made more available for future growth. If the weather is dry, and the land in good working condition, sow the seed in April. Early sowing provides a longer season of growth, and enables the roots to be lifted earlier in the autumn. The earlier storing of the roots renders them more secure from frost. Early sowing, too, enables the plants to be set out, thinned, and hoed before haymaking begins, which supersedes such work as hoeing. 2 lbs. of seed per acre is sufficient to produce a full plant. As to variety, this is a matter for circumstances. For cows in milk grow Golden Tankard. For sheep grow the Globe type, as it yields more bulk.

Mangold in clamps intended for food for some months yet, should be exposed to the air, and would be all the better if turned over, to check both root and top growth. Such growth is now taking place, owing to lack of air and light. Should there be any decayed roots they should be removed as having a tendency to contaminate those in contact with them. The sprouts should also be removed, as if fed to cattle or sheep they are apt to cause scour. In the case of cows, where the roots are put through the slicer or pulper the top (crown) of the root as well as roots and all dirt should first be removed, giving the animals only the clean root. Such details are of the utmost importance in obtaining satisfactory results. *E. Molyneux*.

MARKETS.

COVENT GARDEN, April 25.

Plants in Pots, &c.: Average Wholesale Prices

	s. d.	s. d.
All 48's, per doz.		
Aralias	7 0- 8 0	
Araucaria excelsa	7 0- 8 0	
Asparagus plumosus	10 0-12 0	
— Sprengeri ...	9 0-10 0	
Aspidistra, green...	36 0-42 0	
Boronia megastigma... ...	18 0-24 0	
Cyclamens	21 0-24 0	
Cineraria ...	10 0-12 0	
Erica persoluta ...	36 0-42 0	
— Wilmoreana ...	30 0-36 0	
Genistas	18 0-24 0	
Marguerites, white	9 0-10 0	
Mignonette ...	12 0 15	
Roses, pedunculus ramblers (each)	24 0-30 0	5 0-12 0

Ferns and Palms: Average Wholesale Prices

	s. d.	s. d.
Adiantum cuneatum, 48's, per doz.	9 0-10 0	
— 24's	9 0-10 0	
Asplenium, 48's, per doz.	9 0-12 0	
— 24's	21 0-24 0	
— nidus, 48's ...	10 0-12 0	
Cyrtomium, 48's ...	8 0-10 0	
Nephrolepis, in variety, 48's ...	12 0-18 0	
— 24's	24 0-36 0	
Pteris, in variety, 48's	8 0 12 0	
— large 60's ...	4 0 5 0	
— small 60's ...	3 0- 3 6	
— 72's, per tray of 15's	2 0- 2 6	

Cut Flowers, &c: Average Wholesale Prices

	s. d.	s. d.
Anemone fulgens per doz. bun...	4 0- 5 0	
Arums—		
— (Richardias), per doz. blms.	8 0- 9 0	
Azalea, white, per doz. bunches ...	6 0- 8 0	
Carnations, per doz.		
— blooms, best American var.	3 0- 5 0	
Croton leaves, per bun.	1 3- 1 6	
Daffodils (single), per doz. bun — Barrii ...	2 0- 2 6	
— Emperor ...	2 0- 2 6	
— Sir Watkin ...	2 0- 2 6	
— Victoria ...	2 0- 2 6	
Eucharis, per doz. blooms	2 0 4 0	
Gardenias, per box (12's)	5 0- 6 0	
— (18's)	3 0- 4 0	
Heather, white, per doz. bun...	9 0 12 0	
Iris, Spanish, per doz. bunches—		
— white	4 2 0 4 8 0	
— blue	4 2 0 4 8 0	
— yellow	4 2 0 4 8 0	
— mauve	4 2 0 4 8 0	
Ixia, red, per doz. bunches ...	2 6- 3 0	
Lilium longiflorum, long ...	8 0- 9 0	
— — rubrum, per doz. long ...	5 0- 6 0	
— — short, per doz blooms ..	2 6- 3 0	
Lily-of-the-Valley, per doz. bun ..	36 0-42 0	
Narcissus, ornatus, per doz. bun. ...	2 0- 3 0	
— poeticus ...	3 0- 4 0	
Orchids, per doz:—		
— Cattleyas ...	18 0 —	
Pelargoniums, double scarlet, per doz bunches ...	12 0 18 0	
— white, per doz. bunches ...	6 0- 8 0	
Primroses per doz bunches	1 0- 1 3	
Roses, per doz blooms—		
— Frau Karl Druschki ...	3 0- 5 0	
— Général Jacqueminot ...	2 0- 2 6	
— Joseph Lowe ...	4 0- 5 0	
— Lady Hillingdon ...	2 6- 3 0	
— Ladylove	4 0- 6 0	
— Liberty	5 0- 5 0	
— Madame Abel Chatenay ...	3 0- 6 0	
— Niphetos	2 6- 3 0	
— Richmond	3 0- 5 0	
— Sunburst	4 0- 6 0	
Star (allium), per doz bunches ...	3 0 4 0	
Stephanotis, per 12 pips	4 0- 4 6	
Stock, English, per doz. bunches ...	6 0- 8 0	
Sweet Peas, various, per doz. bun ...	0 0 1 8 0	
Tulips, per doz blooms		
— Darwin, various	1 6- 1 6	
— Single, white	1 0- 2 6	
— — Yellow	1 6- 2 6	
— — Pink ...	1 6- 2 0	
— — Red ...	1 3- 1 6	
Violets, per doz. bun.	3 0- 4 0	

Cut Foliage, &c.: Average Wholesale Prices

	s. d.	s. d.
Adiantum (Maiden hair Fern) best, per doz. bun ..	8 0-10 0	
Asparagus plumosus, long trails, per half-dozen ...	2 6- 3 0	
— — medium, doz bunches	18 0-21 0	
— Sprengeri ...	10 0-15 0	
Berberis, per doz bun. ...	6 0- 8 0	
Carnation foliage, doz. bunches ...	4 0- 5 0	
Cycas leaves, per doz.	3 0- 6 0	
Ivy leaves, per doz. bunches ...	2 0- 2 6	
Moss, gross bun. ...	7 0- 8 0	
Smilax, per bun. of 6 trails ...	2 0- 2 6	

REMARKS.—Supplies are considerably less this week owing to weather conditions. Arums (Richardias) are back to the prices realised at Easter, and Lilium longiflorum is very dearly. L. lancifolium is unobtainable. All white flowers are exceptionally scarce, and prices considerably higher. Small white flowers required for making designs will be difficult to obtain during the next two or three weeks. Small quantities of Stephanotis and Lapagerias are now being received, and Gardenias are increasing in number. Lily-of-the-Valley is very limited. Roses were considerably checked by the cold weather and lack of sunshine. Red and white blooms were in great demand for St. George's Day, red blooms realising from 5s. to 12s. per doz., and white from 4s. to 8s. Mme. A. Chatenay, Melody, Lady Ley, Sunburst, White Molly Sharman Crawford, Liberty, and Richmond are arriving in excellent condition, though they are not very plentiful. Spanish Iris is arriving in fine condition.

Fruit: Average Wholesale Prices

	s. d.	s. d.
Apples:—		
— English, per bus.	3 0- 4 5 0	
— Russets, French, crates of about 60 to 70 lbs. ...	6 0- 7 0 0	
Dates, per box ...	1 8 —	
— Arabian, per cwt.	4 5 0 —	
Figs, Worthing, per doz ...	1 0- 2 4 0	
Grapes:—		
— Almeria, per barrel (3½ doz. lbs.)	7 0 0- 7 5 0	
Grapes, con—		
— Black Hamburgh, per lb ...	0 6- 1 2 6	
Lemons, per case...	2 0- 7 0 0	
Oranges, per case	1 0 0-1 2 0 0	
— new seedless, per case ...	8 0 0 —	
Peaches, per doz ...	1 8 0 2 4 0	
Strawberries, forced per lb. ...	5 0-14 0	
Walnuts, kiln dried, per cwt. ...	3 4 0-10 5 0	

Vegetables: Average Wholesale Prices

	s. d.	s. d.
Artichoke, Jerusalem per ½ bushel	1 3- 1 6	
Asparagus (English), per bundle ...	2 6- 3 6	
— Lauris	4 6- 8 0	
Beans:—		
— Broad, per pod	7 0- 8 0	
— French (Channel Islands), per lb.	2 3- 3 6	
Beetroot, per cwt	6 0 —	
Carrots, new, per doz. bunches ...	12 0-18 0	
— per bag ...	10 0	
Cauliflowers per doz	4 0- 6 0	
Cel-fire, per doz.	6 0- 8 0	
Celery, per bundle	2 6- 4 0	
Cucumbers, per doz	7 6- 9 0	
Endive, per doz ...	2 6- 3 0	
Garlic, per lb. ...	0 8 —	
Greens, per bag ...	6 0- 9 0	
Herbs, per doz bun.	2 0- 4 0	
Horseradish, per bun.	3 6- 4 0	
Leeks, per doz. bun.	2 6- 3 0	
Lettuce, Cabbage and Cos, per doz	1 0- 4 0	
Mint, forced, per doz. bun	6 0- 8 0	
Mushrooms, per lb.	3 0- 4 0	
Mustard and Cress, per doz. punnets	1 0- 1 3	
Onions, French, per cwt. ...	35 0-38 0	
— spring, per doz. bun. ...	4 0- 6 0	
— Valencia, per case (4 tiers) ...	25 0-40 0	
— (5 tiers) ...	25 0-40 0	
Parsley, per strike ...	2 6- 3 0	
Parsnips, per bag ...	6 6- 7 0	
Peas, per lb.	2 0- 2 6	
Potatos, new, per lb.	0 5- 0 6	
Radishes, per doz. bunches ...	2 0- 3 0	
Rhubarb, forced, per doz bundles	1 6- 2 0	
— natural, per doz.	4 0- 6 0	
Seakale per punnet	2 0 —	
— outdoor, per box (abt. 14 lb).	10 0 —	
Shallots, per lb. ...	0 0- 1 0	
Spinach, per bus. ...	3 0- 5 0	
Swedes, per bag ...	3 0- 4 0	
Tomatos, per lb. ...	2 0- 3 6	
Turnips, per bag ...	10 0-12 0	
— new, per bunch	2 6- 3 0	
Turnip-tops, per bag (72 lbs.) ...	4 0- 6 0	
Vegetable Marrows, per doz ...	0 0-12 0	
Watercress, per doz	0 8- 0 10	

REMARKS. Stocks of English Apples are now practically cleared, but French Russets are still available. The old crops of English Grapes are finished, and the new season's Black Hamburgh are on offer, as are also Green Figs and Peaches. Morning-gathered forced Strawberries are available in fair quantities for the season of the year. Lemons and Oranges continue to be scarce and expensive. Cases of Dates are now on offer containing about 2 lbs. weight of fruit. Supplies of Tomatos (English and Channel Islands) are increasing daily. Dwarf Beans have been a shorter supply this season than usual, and supplies of forced Seakale are limited. Outdoor Seakale is fairly plentiful. Asparagus, English and Continental, is limited in quantity, but supplies of Cucumbers and Vegetable Marrows are increasing. Mushrooms are not so plentiful, and English Onions are unobtainable. Valencia and French Onions are fairly plentiful, but are not keeping well. Outdoor vegetables and roots have advanced in price. *F. H. F. Covent Garden Market, April 25, 1918.*

Obituary.

J. HARRISON DICK.—Mr. J. Harrison Dick, whose early death we announced in our issue of April 6, p. 151, was born in Edinburgh on October 13, 1877, in the district of Morningside. When about four years of age, the family went for a time to Aberdeen. His father being appointed head gardener to Lieut.-General Henry,

THE LATE J. HARRISON DICK.

C.B., at the Pavilion, Montrose, the family returned to the Edinburgh district, and on this famous estate he spent his early days. In November, 1893, he went to Morton Hall, Liberton, as outside journeyman. Up at six every morning, he studied until eleven or twelve at night, and walked three miles to Edinburgh twice a week, all winter, to attend lectures. His next place was Trinity Grove, Edinburgh, close to the Botanic Gardens, at which latter place he obtained permission to attend the classes on botany, physics, chemistry, and landscape gardening. In 1898 he went to Veitch's Nursery, Chelsea, and a little later to Nostell Priory, Wakefield. In April, 1899, he joined the *Gardening World*, of London, as a reporter. He was appointed sub-editor of the *Journal of Horticulture* in February, 1901, and took over the editorial chair in November, 1911. During his five years at Edinburgh, Mr. Dick gained certificates and prizes for proficiency in such subjects useful to a gardener as botany, organic chemistry, entomology, surveying, and mensuration. He studied wash drawing at the Birkbeck College, and some of his illustrations have appeared in the *Journal of Horticulture*. Mr. Dick was a member of the committees of the National Sweet Pea Society and National Dahlia Society, and vice-chairman of the executive committee of the United Horticultural Benefit and Provident Association. He became editor of *The Florists' Exchange*, of America, in October, 1913.

Mr. Dick was responsible for the inception and editing of the *Gardeners' and Florists' Annual*, in the preparation of the several issues of which he devoted much of his spare time. For the A. T. De La Mare Co. he wrote *Sweet Peas for Profit*, *Commercial Carnation Culture*, and *Mushroom Culture*, these books enjoying an active sale among the trade. He edited the first issue, in 1917, of *Garden Guide, the Amateurs' Handbook of Gardening*, a most successful book. He made an efficient secretary of the American Dahlia Society, and compiled all its recent bulletins. He was re-elected on the executive committee of the American Sweet Pea Society at its annual meeting last July, and compiled its first bulletin. His position as editor of the *Florists' Exchange* provided him with the opportunity to visit all the large centres of the East and Middle West of the United States. Wherever he went he made warm friends, for with all his knowledge he was modest and unassuming, lovable and approachable by all. He leaves a widow and one young daughter.

ENQUIRY.

A READER will be much obliged if someone will supply her with a recipe for cooking Soy Beans. *M. F.*

DEBATING SOCIETIES.

BUSHEY AND DISTRICT GARDEN AND ALLOTMENT ASSOCIATION.—At the fortnightly meeting of the above society on the 9th instant, Mr. T. W. Birkinshaw, Gardener at Caldecote Towers, Bushey Heath, gave a lecture to the members on "Salad Plants and their Cultivation." He mentioned about a dozen varieties which were most serviceable for salads, and gave the full treatment of each variety. After the lecture a general discussion took place, and many questions were asked.

CATALOGUE RECEIVED.

ALLWOOD BROS., Wivelsfield Nurseries, Haywards Heath, Catalogue.

ANSWERS TO CORRESPONDENTS.

FLUE DUST: *J. H.* In appearance the sample of dust you submit resembles some of the flue dusts rich in potash, but no definite opinion can be given without a chemical analysis. Probably a local analyst would examine it for you for a small fee.

NAME OF FRUIT: *B. E.* Brabant Bellefleur.

NAME OF PLANT: *F. C., Guildford.* Staphylea pinnata, a Southern European shrub, also found growing wild in some parts of Great Britain.

RADIUM: *F. J. I.* An article on the subject of radium and plant-growth appeared in our issue for September 16, 1916, which can be obtained from our publishing department, price 3½d. post free. If you want a fuller work, Messrs. Sutton and Sons, Reading, have published an account of a series of experiments which you can obtain from them at 2s. 6d. net per volume, plus postage.

TOMATOS: *W. H. C.* The seedlings were heavily infested with disease; some were affected with bacteria, other stems were filled with the mycelium of a fungus. No measures short of the removal and destruction of such diseased seedlings can be recommended. Avoid excessive watering and crowding of the remaining plants.

Communications Received.—"Leicester."—"Diseased Leaves."—"Puzzled."—W. D. & Sons.—F. R.—H. P.—R. F. B.—F. B.—R. A. M.—H. T. W.—E. C. W.—A. D. R.—R. G. W. W.—V. H. L.—W. B. H.—G. H. H. W.

THE
Gardeners' Chronicle

No. 1636.—SATURDAY, MAY 4, 1918.

CONTENTS.

ILLUSTRATIONS.

THE JERUSALEM ARTICHOKE.

FOR nearly three hundred years the plant known to botanical science as Helianthus tuberosus has borne, in English gardens, the name of Jerusalem Artichoke. In these latter days, when many established beliefs are in the melting-pot, the claims of this appellation are being questioned, and efforts are being made to substitute another name, more descriptive and more truthful. Incidentally, the discussion has widened into an inquiry upon the subject of the introduction of the plant into this country, but has done little beyond disclosing how little is known as to its origin.

Botanists have long occupied themselves with this same question, and the names of Asa Gray, Decaisne, De Candolle, and Schlechtendal will readily occur to the mind in connection with this interesting point of historical research. The care, however, with which these eminent scientists have delved into the past has produced a negative rather than a positive result, in that they have all come to more or less the same conclusion that historical evidence of the origin and introduction of the Jerusalem Artichoke is almost unobtainable, and that tradition varies so greatly as to be entirely untrustworthy.

It appears evident, however, that the plant is a native of the United States or of Canada (the term "Canada" in the seventeenth century often included what are now known as the United States). Travellers at the end of the sixteenth and beginning of the seventeenth centuries used to tell of a native American plant the roots of which were eaten by the "Indians," and which tasted like the Artichoke. At that time the Potato was so little known in Europe that travellers from this continent frequently confused the Potato with other plants of which the tuber was eaten, thus considerably increasing the confusion in the nomenclature of the Jerusalem Artichoke. It seems fairly evident, however, that where a "taste of the Artichoke" is mentioned, the plant referred to is Helianthus tuberosus, as by no stretch of imagination could such a flavour be ascribed to the ordinary Potato. It is, however, this confusion which has led to one of the earlier names of the Jerusalem Artichoke, namely, "Battatas of Canada"; it is under this name that it is mentioned, in 1629, by Parkinson in his *Paradisus*.

The traditional origin of the French name Topinambour is so slight that one would hesitate to give it, were it not that it is supported by the authority of Monsieur Georges Gibault, the indefatigable librarian of the French Société Nationale d'Horticulture, in his *Histoire des Légumes* (1912). It would appear that in 1613, the approximate year of the introduction of the Jerusalem Artichoke into France, a little party of the savage inhabitants of the isle of Maragnon, Brazil, was brought to France as a curiosity. These natives were called by the French "Toupinambaux," which designation is apparently a corruption of the name "Tupi Guarani," by which they were known to Brazilian settlers. The coincidence, therefore, of the introduction of the "Topinambaux" and of the strange, new tuberous vegetable led to the tubers being called by the name of the savage visitors (afterwards still further corrupted to Topinambaux and Topinambours), though there is not the least evidence that the Topinambour was ever grown in Brazil, or that these particular savages ever ate it!

The name Topinambour, which falls so pleasantly and trippingly from French lips, and was willingly adopted in other (chiefly Latin) countries, did not find favour with the English. The vegetable was introduced into this country in 1617 by a Frenchman, Monsieur Francqueville, resident in London. It seems, therefore, reasonable to suppose that it must have come to us first under its quaint French name; but already in 1629 we find Parkinson describing it under the name of Battatas of Canada. In 1640, however, in the same author's *Theater of Plants*, there occurs, probably for the first time, the name by which it has ever since been known to us, Jerusalem Artichoke.

How did Parkinson arrive at this extraordinary name? Certainly he did not think the plant was a native of Palestine, for he himself had previously named it "of Canada." In order to obtain some light upon the subject we must go to Italy, which country had also, by this time, received the new vegetable, and had adopted it with some readiness. It was, in fact, introduced into Italy before it was known in this country, namely, some time before 1616; tradition says, from Peru, though it has never been found to be indigenous to that country, or to any part of South America. However that may be, it seems certain that it was not introduced into Italy through France, but direct from America. The Italians would thus be under no temptation to use the French name, but would name it for themselves—which they accordingly did, by the beautiful name of "Girasole" "Turn-as the sun." Now, it is quite probable that between 1629 (when Parkinson wrote his *Paradisus*) and 1640 (the date of publication of the *Theater of Plants*), when English gardeners appeared to have finally accepted the name of Jerusalem Artichoke, the Italian name Girasole had become known in this country. Topinambour, if ever used, had long been abandoned, owing probably, as before suggested, to the difficulty of pronunciation; "Battatas" would have been found impracticable, on account of the growing popularity of the true Potato, with which, if it bore a similar name, the new tuber would have been hopelessly confused; what, then, more natural than to adopt the simple Italian name of "Girasole"? Once adopted, it would share the fate of the majority of imported words; its meaning unknown to the greater number of people who used it, the word would immediately become converted to something that *was* known. English pronunciation, we know, has changed considerably in the past three hundred years; and what little we know of the rules it has followed would lead us to infer a still closer resemblance in 1640 between the words "Girasole" and "Jerusalem" than exists to-day.

Having arrived, then, at the word "Jerusalem" (which would be considered in the light of an adjective), some noun would be sought to tack on to it. The word "Artichoke" would naturally be chosen to fill this hiatus, on account of the taste of the new vegetable, which was considered to resemble that of the inflorescence of Cynara.

A correspondent who has written so interestingly in these pages on this subject over the initials *H. E. D.* mentions the name "Tartufoli" as a synonym for Girasole. But Monsieur Gibault (*op. cit.*) differs from him, and I am bound to say I agree with Monsieur Gibault when he says: "La plante appelee Tartufli, truffe, . . . décrite par Olivier de Serres en 1600, n'est pas le Topinambour comme Parmentier l'a cru. . . . C'est la Pomme de terre."

We may mention one more so-called synonym on which there appears also to have been some confusion. Lescarbot, who was one of the earlier colonists in Canada, writes in 1618 deprecating the use of the foolish name "Topinamlaux," stating that the natives of Canada called the vegetables in question "chiquebi." Monsieur Lescarbot tripped, however, in making this statement; the name "chiquebi" was applied by the Algonquins only to the tubers of Apios.

As an example of the danger of loose derivation, and of the habit of mind known to philosophy as "rationalisation," we give one quotation from the writings of De Combles, 1749. He wrote (at a time when the French taste for Jerusalem Artichokes had considerably declined): "Voici le plus mauvais légume dans l'opinion générale; cependant

. . je dois . . . placer ce légume avec les autres. Les fruits (tubercles) sont de la grosseur d'un oeuf; cette plante est venue d'Amérique, *du pays des Topinambours, d'où elle tire son nom.*" The italics are my own, but are scarcely necessary to point the moral to us, who know on how slight a foundation rests the assertion contained in those words.

The subject of popular nomenclature forms one of the most fascinating of studies; the pity of it is that too much of the evidence on which, *faute de mieux*, we must rely, is either altogether erroneous or in the nature of the extract given immediately above. *M. E.*

ORCHID NOTES AND CLEANINGS.

ODONTOGLOSSUM VICTORY VAR. THE BARONESS.

By the use of a specially selected hybrid of perfect shape—of which the parentage is not known—for crossing with Odontoglossum crispum The Baroness, Messrs. Armstrong and Brown, Orchidhurst, Tunbridge Wells, have raised a specially fine race, which they have named their "Victory" strain. The first of these hybrids was shown at the Royal Horticultural Society's meeting on October 12, 1915, and was awarded a Preliminary Commendation; the variety was described in *Gard. Chron.*, Oct. 16, 1915, p. 253. Since that time several forms of the batch have been shown, all bearing the same characteristics of perfect shape and remarkably firm substance as in the original cross. The variety The Baroness, illustrated in fig. 81, is the latest of these hybrids which has flowered, and shows the perfection of all the floral points aimed at by the hybridist. The ground colour is white, the markings rich Indian red with a shade of orange colour.

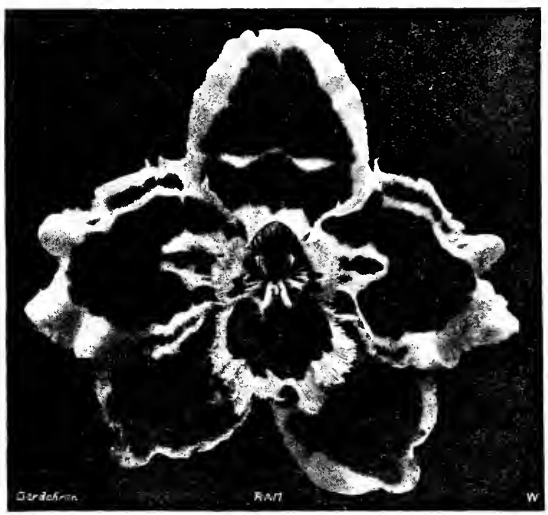

FIG. 81.—ODONTOGLOSSUM VICTORY VAR. THE BARONESS.

BRASSO LAELIA JESTER.

A flower of this cross between Laelia Jongheana and Brasso Laelia Jessopii (L. xanthina × B. Digbyana) is sent by Pantia Ralli, Esq., Ashtead Park, Surrey (Orchid grower, Mr. W. H. White), in whose gardens it was raised and is flowering for the first time. The flower, which is nearest in form to B. L. Jessopii, shows little of the Laelia Jongheana parent, except in the golden-yellow disc of the lip and the undulation of its fringed margin. The sepals and petals are sulphur-yellow with a slight tinge of rose colour on the tips of the petals and the margin of the lip, the colour on which is much more highly developed on one side than the other, and scarcely perceptible on the lighter side.

ODONTIODA LEDA.

An inflorescence of this bright scarlet Odontioda of medium size, sent by Eustace F. Clark, Esq., Eversholt, Dorsetshire, is specially interesting in that, although in the ancestry there are several blotched Odontoglossums, the flowers on the spike sent give not the slightest trace of markings. In the slender habit and colour of the flowers, and especially the form of the lip and its yellow crest, the hybrid closely adheres to C. Noezliana, differing mainly in its larger flowers. The purple colouring on the back of the column of C. Noezliana is also visible in the hybrid. Oda. Leda was raised by Messrs. Sander and Sons, who first flowered it in 1914. It resulted from crossing C. Noezliana and Odm. Rio Tinto (gandavense × sceptrum).

SOPHRONITIS GRANDIFLORA.

Several brilliant scarlet examples of this compact-growing little species were shown at the Royal Horticultural Society's meeting on the 23rd ult., the bright colours of the flowers contrasting pleasingly with the variously tinted Odontoglossums and other Orchids in neighbouring exhibits.

Mr. W. H. White, Orchid grower to Pantia Ralli, Esq., Ashtead Park, Surrey, sends several examples of the bright scarlet flowers produced in pairs, and not singly, as is usual in the species. The production of twin flowers has frequently been recorded, and usually in favourable seasons by plants well grown in a cool or cool intermediate house and suspended near the roof-glass. The production of two flowers is said to be more frequent with some plants than with others.

ORCHID SALES.

The sale by auction of the Orchids in the collection formed by the late O. O. Wrigley, Esq., Bridge Hall, Bury, took place on April 16 and two following days. The buyers, chiefly amateurs, showed keen interest in the sale. The next event of the kind will be the sale of the extensive collection belonging to the late Mr. John Leemann, Heaton Mersey, near Manchester. The sale will be conducted by Messrs. Protheroe and Morris, on Tuesday, May 14, and three following days. The collection is rich in hybrids and named varieties of species.

ON CALORIES.

(*Concluded from page* 173.)

We must now turn to the other side of the question and seek to discover how many calories are required to enable a man to do the day's bodily work. The caloric requirements will, of course, depend on many factors, of which some of the chief are amount of work done, age, weight, and sex.

So far as sex is concerned caloric experiments carried out in different countries indicate that a woman's requirements are, on the average, about 30 per cent. of those of a man. But a complication comes in when age is considered, for whereas persons of all ages require food, not only for work-doing purposes, but also for repair of tissues, youth, the period of construction, requires more of the repair and constructional foods—that is, the proteins. Hence, in any system of rationing provision must be made for supplying young children with sufficient tissue building foods.

Again, the energy consumed per day will manifestly depend on the quantity and *intensity* of the work done. Even during sleep, energy derived from the combustion of food is required to keep the bodily machine running; but since all that energy, needed for the pumping of blood through the body, the pumping of air in and out of the lungs, ultimately runs down as heat, it helps to maintain the temperature of the body. This latter work, however, that of keeping up the temperature of the body, is always a first charge on the energy obtainable by the combustion of food. When violent exercise is taken all the heat energy produced cannot be used, and the body automatically takes steps to use up the surplus heat-energy by promoting perspiration. The heat energy is used to evaporate water from the surface of the skin.

Therefore, violent work is extravagant of fuel; in other words, men engaged in heavy manual work use more calories than those engaged in work of average heaviness, and these in turn use more than those in semi-sedentary or sedentary occupations. Hence a scientific system of rationing must be based not only on age and sex, but also on occupation.

There are several means by which caloric requirements may be ascertained.

One, which is the best, but most laborious and difficult, is to measure the work done by an individual, and at the same time to determine the energy value of the food supplied. By experiments along these lines it has been found that, as already stated, about 30 per cent. of the energy supplied by the heat units of the food may be used for the day's work. Accepting this fraction it is possible to say that if the day's work of a man requires so much energy, he must be supplied with food sufficient to provide 3⅓ times as much energy.

Another experimental method of ascertaining the number of calories required is to measure the total output of energy in heat units (calories). Experiments made in this way have shown that in the case of a metal filer working at a known rate 3,656 calories were liberated (and therefore consumed) in a day, 8 hours of which were devoted to work, 8 to "rest," and 8 to sleep. Evidently if we had sufficient experimental evidence of this kind we should have a complete answer to our question; but we have not. Recourse must therefore be had to a third and less satisfactory method, that of collecting statistics with respect to the amount of food consumed, from large numbers of people belonging to one or other section of the community. In spite of the somewhat unsatisfactory nature of this indirect method, the results obtained in different countries and by many different observers, are very concordant. Thus the daily diet of a large number of English agricultural families was, on the average, composed of: Proteins, 3 oz.; fats, 3 oz.; and carbohydrates, 19 oz., representing a total of about

3,500 calories. The average diet of some 18,000 English munition workers proved to be: Protein, 4 oz.; fat, 4⅔ oz.; and carbohydrates, 14 oz., with a total caloric value of 3,460. Evidently bread, which makes so large a contribution to the agricultural worker's diet, was replaced in the case of the munition workers by an approximately corresponding amount of proteins and fats.

From these and other statistics it may be inferred that a grown man of average weight (150 lbs.), doing moderately hard work, requires 3,500 calories per day. As the work done increases or decreases, so the caloric requirements rise or fall very rapidly. Thus, for very active physical work about 4,500 calories per day are required, and this number rises in extremely hard work to 5,000. On the other hand, for light sedentary work no more than 2,500 calories a day are required, and those who do no active work whatever use no more than 2,300 calories.

With the table already provided in which the composition of the various foodstuffs is given anyone may work out for himself the amount—and at current prices the cost—of a sufficient ration. To do this a reduction of 12 per cent. on the caloric value of food "as bought" should be allowed for waste in cooking, in cut preparation and digestion.

It is also easy to calculate the number of calories contained in the rationed diet, and thus to ascertain the number which must be supplied from non-rationed articles.

Other points, however, require to be borne in mind by anyone who desires to base his diet on the ascertained facts relating to the human machine. One is that if food is of a very low grade—as, for example, in the case of horses poor hay—it may require so much digestive work to be done on it that the food if used alone, although it will keep store animals alive during rest, will not suffice for working animals.

Moreover, in addition to heat producing and tissue building foods, the body requires a sufficiency of mineral salts and of what may be called natural preventive medicine foods. These latter substances, known commonly as vitamines (see *Gard. Chron.*, December 22, 1917, p. 251), occur naturally in eggs, milk, and in fresh vegetables, and are essential for the maintenance of the health of the body. Hence every diet should comprise some of the vitamine containing food stuffs, although the quantity required is extremely small. A diet, for example, which is made up exclusively of canned foods is likely to be followed by signs of malnutrition and disease. The claims of fresh vegetables to a regular place in the diet are based on the fact that they are rich both in mineral salts and also in vitamines. To obtain the full value from these foods it is essential that they be properly cooked. If vegetables are cut into pieces and immersed for a long while in water, much of the "goodness"—that is, the mineral salts, and probably also the vitamines is dissolved and lost. Herein lies the advantage of vegetable soups, so popular among the thrifty peasants of France and Belgium.

NEW OR NOTEWORTHY PLANTS.

EUCOMIS POLE EVANSII, N. E. BR.*

It is interesting to note how certain genera have in some way appealed to the gardener, have gained his favour, have been modified and improved by his methods of selection and hybridisation, and have emerged from the process to become general garden favourites. Other genera that would seem equally to merit the consideration of the horticulturist have, from some cause or other, been neglected, with the result that they are not so frequently seen in cultivation as their worth might cause one to expect. Among such may be ranked the South African genus Eucomis, of the order Liliaceae. Some species of this genus have been in cultivation off and on for more than a hundred years, and one species for over two hundred years, yet they remain to-day as when first introduced. They are bulbous plants that never seem to have become popular, possibly because their flowers are not brightly coloured. Yet they are decidedly striking in appearance, and more or less ornamental in somewhat stiff looking. The tuft of small leaves which terminates the flower spike is their most striking characteristic, whilst the stout, dense spike of moderate sized flowers, although not brilliantly coloured, is by no means unattractive. All the species hitherto described range from about 1 foot to 2½ feet in height, but about three years ago Mr. I. B. Pole Evans, chief botanist to the Department of Agriculture, Pretoria, found growing along the edges of small streams on the high veldt between Lydenburg and Machadadorp, in the Transvaal, an undescribed species that is the most gigantic of all Eucomis at present known. Mr. Pole Evans sent living bulbs and dried specimens of the plant to Kew, accompanied by the photograph reproduced in fig. 82 of the plant as it grows in the grounds attached to the Laboratory at Pretoria. The illustration shows an ornamental plant of noble proportions: the fully developed flower stem is 5·6 feet in height, forming a large spike of cream-coloured flowers. The newcomer should prove a welcome addition to our half hardy plants, but it would probably not survive our winters if treated as hardy.

Specifically it is allied to E. pallidiflora, but is twice as tall; the leaves are longer and broader; the pedicels longer and much more spreading; the perianth cream-coloured, instead of greenish white; and the ovary straw-yellow, instead of green. I have a suspicion that this species has been introduced once before and wrongly supposed to be E. pallidiflora, but I have no knowledge that it still exists in cultivation. The following are its characters, partly compiled from particulars sent to me by Mr. Pole Evans, after whom I have great pleasure in naming this very fine plant.

Bulb ovoid, up to 4 inches in diameter. Leaves 9-12 to a bulb, 2½-4 feet long, 4-7 inches broad, ascending, broadly strap shaped-lanceolate, subacute, channelled along the midrib, undulated along the margins, soft in texture. Flower stem 5-6 feet in total height, with the peduncle about 4 feet long and an inch thick, light green; the raceme 12-18 inches long and 3½-5¼ inches in diameter, lax below and dense above, with a tuft

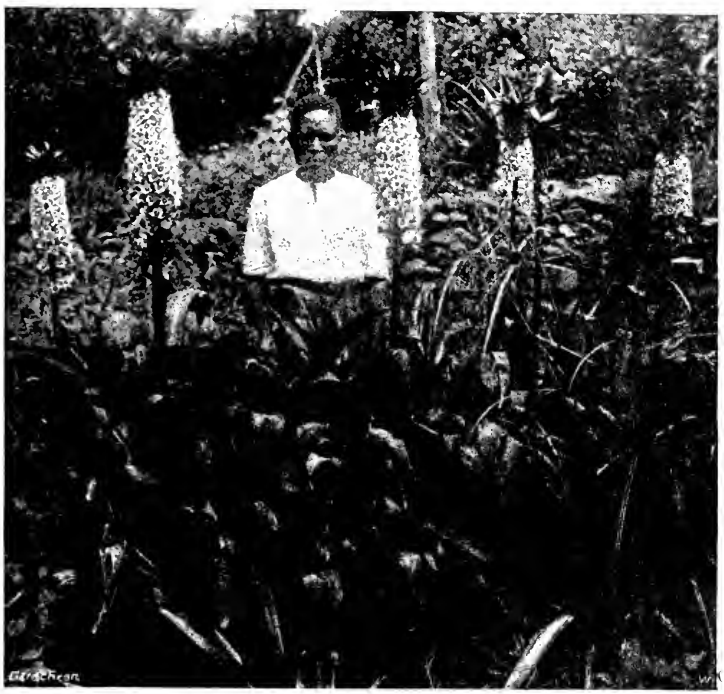

FIG. 82.—EUCOMIS POLE EVANSII GROWING IN THE GROUNDS OF THE BOTANICAL LABORATORIES OF THE UNION, PRETORIA.

of 23-90 small leaves at the top. Bracts about ⅛-¼ of an inch long, lanceolate, acute. Pedicels 1¼-2 inches long, spreading or slightly ascending, spreading. Segments of the flower ⅜ of an inch long, elliptic ovate, sub obtuse, cream coloured. Stamens shorter than the perianth segments, with the filaments dilated at the base and forming a distinct cup, green. Ovary globose conical, straw yellow.—*N. E. Brown.*

* *Eucomis Pole Evansii* n. sp. N. E. Br. Bulbus ovoideus, 10 cm. diametro. Folia 9-12, adscendentia, 75-180 cm. longa, 10-18 cm. lata, late lanceolata, et costam canaliculata, undulata. Pedunculus 120 cm. longus, 2½ cm. crassus, viridis. Racemus 30-47 cm. longus, 9-13 cm. diametro, Coma 23-90 foliata, foliis oblongo lanceolatis acutis. Bracteae 1-1½ cm. longae, 1-6 mm. latae, lanceolatae, acutae. Pedicelli 3-5 cm. longi, patuli. Perianthi segmenta 15 mm. longa, elliptico-ovata, subobtusa, pallide flavo alba. Stamina 10 mm. longa; filamenta basi dilatata viridia. Ovarium conico-globosum, in stylum abrupte attenuatum, stramineum.

sunny places the plant colours well, and is a fascinating subject for the rock garden. I believe the variety was brought by the late Mr. Potts, of Edinburgh, from Vienna a number of years ago and introduced by him to several gardens.

IONOPSIDIUM ACAULE.

IONOPSIDIUM ACAULE, the Violet Cress, is particularly suitable for the shadier nooks and corners of the rock garden. Growing only an inch or two high, it gives brightness and attractiveness to places where a few miniature flowers are welcome in late summer and autumn. The plant has glossy leaves and small, pale, violet-blue flowers. In a shady spot it blooms for a long time, and frequently sows itself for another season. Sown in the open from the middle of April to the end of May, the seedlings if well thinned soon reach the flowering stage. *Index Kewensis* refers it to Cochlearia and gives its name as C. acaulis, but the name of Ionopsidium has been long established in gardens. Maund, who called the plant Ionopsidion acaule, stated that according to the *Botanical Register* the plant was received by "the London Horticultural Society from the garden of the Duc d' Palmella, near Lisbon, in 1845. It is said to be found wild on the basaltic hills, near Lisbon, and occasionally on the limestone formation of Estramadura." *S. Arnott.*

NOTICES OF BOOKS.

THE FLORA OF MADRAS.*

THE families dealt with in this part of Gamble's *Flora* are eleven in number, and, apart from the Papilionaceae, mainly composed of woody elements. Celastraceae and Rhamnaceae are represented by nine and eight genera respectively, showing a relatively large concentration of these families; and Sapindaceae and Anacardiaceae by twelve and eleven genera, more than half by a single species each. The occurrence of a Maple, Acer niveum, is noteworthy. But the Papilionaceae constitute the bulk and important element of this part, comprising no fewer than 59 genera, some of them numbering many species. Thus 75 species of Crotalaria are described, 31 of Indigofera, 20 of Tephrosia, 12 of Smithia, 24 of Desmodium, 17 of Rhynchosia, 11 of Flemingia, and 15 of Dalbergia. Bentham and Hooker's classification is followed with slight modifications in the limits of some of the families. Each family is described in sufficient detail, followed by a key to the genera; the genera in their turn are described and followed by keys to the species. All is admirably and clearly set forth, and much less formidable than repetition of characters common to all the species of a genus. Vernacular names in several Indian languages are cited, and useful products are mentioned. Apart from well-known economic roots, timbers, fibres, oils, etc., there are references to other less familiar substances. For example: The root-bark of Ventilago maderaspatana gives a dye. Schleichera trijuga has an edible axil, and the seeds yield an oil; the best lac is produced on its twigs, and the hard, durable wood is used for rice-pounders. Buchanania Lanzan (Anacardiaceae) gives a copious gum, and the kernels of the seeds are largely collected and eaten, as well as those of B. lanceolata and B. angustifolia. The heart-wood of Gluta travancorica is dark red, mottled with orange and black streaks, and is valuable for furniture. Of Sesbania grandiflora the young leaves, flowers and pods are eaten as a vegetable, and the huge tubers of Pueraria tuberosa are sometimes eaten. *W. B. H.*

* *Flora of the Presidency of Madras.* By J. S. Gamble, C.I.E., M.A., F.R.S., late of the Indian Forest Department. Vol. I., Part 2, pp. 201–390. Celastraceae to Leguminosae Papilionaceae. Published under the authority of the Secretary of State for India in Council. (London: Adlard & Son and West-Newman, Ltd.) Price 8s.

The Week's Work.

THE KITCHEN GARDEN.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey

FRENCH BEANS.—Make a first sowing of French Beans in a warm, sheltered position in double lines, in rows 2 feet apart, thinning out the plants later to 6 inches apart. These will follow plants grown in cold houses or frames. A few seeds should also be sown in 3-inch pots or boxes to replace any failures which may occur. A further sowing should be made in ten days' or a fortnight's time, to ensure a regular supply, and again as required. These plants are very tender, and must be protected as soon as they appear through the ground. A little extra attention at this stage may enable the crop to be gathered at least a fortnight earlier. Magpie, Dickson's Belfast, and Ne Plus Ultra may be sown for early supplies, with Canadian Wonder for general use later.

CLIMBING FRENCH BEANS.—These Beans are most productive, and will produce a continuous supply until late in the autumn. Give the plants a little more space, and support with Pea-sticks about 4 feet high. Otherwise treat as for the dwarf kinds. Veitch's Climbing and Tender and True are both prolific, and almost stringless.

RUNNER BEANS.—Seeds sown as advised in pots or boxes will now be growing freely. Continue to grow the plants in such a manner as to keep them sturdy, but protecting them from frost, and plant them out towards the end of the month. Stake the plants at once, to prevent their being injured by rough winds. Sow seeds on well-prepared trenches in double lines 9 inches wide, and allow from 6 to 8 inches between the seeds. Protect the plants as soon as they appear through the ground, and dust with lime and soot, or slugs will quickly destroy the crop.

BEET.—The principal sowing may be made at the beginning of this month on deeply dug ground. Let the rows be 15 inches apart, thinning the seedlings later to not less than 6 inches apart. To obtain exhibition specimens boring must be resorted to, and a little more room allowed; but very large roots are not desirable for ordinary use. Dell's Crimson, Sutton's Green Top and Pragnell's Exhibition may be relied on, with Crimson Globe for early supplies. Keep a sharp look out for sparrows, and dust the seedlings over with soot and lime as soon as they appear.

PARSLEY.—A sowing of this most useful herb should now be made, making a further sowing later to keep up a good supply. Select an open position in a convenient place on well prepared ground, thinning the seedlings later to 6 or 8 inches apart. Champion Moss Curled is a hand some variety and a good grower.

GENERAL REMARKS.—Continue to sow seeds of such plants as those recommended in previous Calendars. There is still time to make good any failures which have occurred. Use the hoe frequently among all spring crops in favourable weather, and apply light dressings of soot when the weather is showery. Allow plenty of air to Peas, Beans, Turnips and Carrots growing in frames when the weather is favourable, and harden off seedlings in readiness for planting out later. Early Potatos in warm positions will now require daily attention to keep them covered with soil as long as possible. A few branches of Spruce may also be placed around them.

THE ORCHID HOUSES.

By J. COLLIER, Gardener to Sir JEREMIAH COLMAN, Bart., Gatton Park, Reigate.

PHALAENOPSIS.—Phalaenopsis Schilleriana, P. amabilis grandiflora, P. Stuartiana, and others that have recently passed out of flower, are now becoming active at the roots. These plants should be given fresh rooting materials each year. A suitable compost is made up of equal parts A1 fibre and Sphagnum-moss chopped rather short. Any Teak-wood baskets that are decayed should be replaced by new ones. When removing the plants, first immerse the basket in tepid water for a short time, which will cause the roots to be more easily detached from the wood. The wires that hold the basket together should be cut, and the bars of wood removed singly. Carefully detach the roots with the blade of a thin knife, wash away all the old compost, and remove dead portions of the roots. Before placing the plant in the basket, half fill the receptacle with portions of Fern rhizomes or clean crocks for drainage purposes. The roots should then be inserted singly between the bars, working the compost between the roots until it is level with the top of the basket. Finish with a layer of clean Sphagnum-moss. If the baskets are in a sound condition, carefully remove all the old rooting materials from between the roots, and afterwards wash the inside of the basket and roots by syringing with clean tepid water, filling up the spaces with fresh compost. These plants may also be grown successfully in shallow pans, preferably without side holes. Employ clean crocks for drainage, and a similar compost to that recommended for the basket plants, with an addition of some crushed crocks and small lumps of charcoal. Phalaenopsis plants should be given a position in the warmest house, where a constant circulation of warm air can be obtained, and should be shaded from the sun's rays during the spring and summer months. The plants may either be suspended from the roof-rafters or placed on the stage on inverted pots standing in saucers of water. The surface of the compost should be watered sparingly with a fine rose until the roots have grown well into it, after which they may be given more liberal supplies. On the approach of winter, moisture should be afforded in reduced quantities. The plants should receive frequent fumigations with an approved vaporising compound in order to destroy insect pests. Plants of P. Rimestadtiana that are now coming into bloom should not be disturbed at the roots until after they have passed their flowering period.

THE HARDY FRUIT GARDEN

By JAS. HUDSON, Head Gardener at Gunnersbury House, Acton, W.

APPLES AND PEARS.—Many gardeners have had difficulty in obtaining sufficient labour in the pruning season for the past two years, and, in consequence, some trees have not been pruned. These trees are, in many instances, producing quite a good show for fruit, whereas the hard pruned trees that were more readily accessible have but a poor display. Possibly the increased root-action has had something to do with this result. Pears Louise Bonne of Jersey (double grafted), Williams' Bon Chrétien, Beurré Superfin, Beurré Diel, Pitmaston Duchess, Marguerite Marillat (also double grafted), and Thompson's, which did not yield well with us last season, are showing well this year. Among Apples, Blenheim Pippin was not at all remarkable with us for its crop last season, but this year the trees are showing well. These are tall trees, which used to be pruned, but have been left unpruned for two seasons. Now they are studded with flowers. Apples are, on the whole, showing very well, and the flowers are vigorous and healthy. Trees which were sprayed in February need not be sprayed again unless it seems necessary. Work of other kinds is very pressing, and increased food production calls for additional labour. These trees must, however, be watched in a month or six weeks' time for caterpillar attack. The recent rains have been beneficial in the case of soil which is shallow and rests upon gravel.

LATE-KEEPING APPLES.—Annie Elizabeth is a most useful late-keeping Apple. It is worthy of more consideration than it usually receives, and keeps until April in good condition. Newton Wonder also helps in providing a supply of Apples for dessert. When well coloured, moderately sized fruits of this variety are quite attractive. These late varieties have not kept so well for many seasons past. Belle de Boskoop and Royal Late Cooking are, as in past seasons, disposed to shrivel.

PEACHES AND NECTARINES.—The season is now at hand when aphis may be giving trouble.

A solution of Quassia chips and soft-soap is quite safe to use, and ought to be effective. Should the fly still be persistent, however, use liquid Gishurst Compound at the lowest strength advised by the makers. The specific should be thoroughly mixed with hot water, and cooler water added to make up the requisite quantity. The netting that has been used to protect against frost should now be removed in nearly every locality. If the soil appears to be at all dry, water the roots close to the wall. Where glass copings are used, watering is most essential at this season of the year.

PLANTS UNDER GLASS.

By E. HARRISS, Gardener to Lady WANTAGE, Lockinge Park, Berkshire.

FREESIA.—By careful attention to cultural details a good percentage of the bulbs which have flowered this season may be induced to flower again next year. Place the plants near the glass in a cool house in full exposure to the sun. Liquid manure may be afforded until the foliage shows signs of dying down; water must then be gradually withheld. Place the pots closely together in a cold frame and keep them quite dry. In August the bulbs may be shaken out of the soil and the most promising selected for potting, using a rich compost for this purpose.

TUBEROUS BEGONIA.—The young plants which have been raised from seed sown early in March should now be large enough to be pricked out. Prepare a quantity of seed-pans or boxes, filling them with a compost of loam, peat, leaf soil, and sand. Mix the soil firm, and prick out the seedlings about 2 inches apart. They must be kept growing gently in a moist, warm atmosphere, and sprayed lightly with tepid rain-water twice a day. When they are large enough to need another shift, they may be transferred to 5-inch pots to flower. Begonias require a little shade when grown under glass, but not too much. The blinds may be drawn up after closing the house in the afternoon.

CHRYSANTHEMUMS. Some of the earliest plants should now be sufficiently hardened to be placed out-of-doors. They must, however, be placed in a sheltered situation. Wattle hurdles make excellent screens for protecting plants from wind, and they should be so erected that a covering of tiffany can be thrown over them in case of frost. The large flowering kinds will now need stakes to prevent damage by strong winds. During favourable weather, the whole of the plants should be sprayed with rain-water twice a day, and as a precaution against aphis they should be sprayed with an insecticide once a fortnight. This should be done late in the afternoon, so that the specific does not dry too quickly. A batch of cuttings struck now will make useful plants for flowering in 6-inch pots. Single decorative varieties are especially useful for this purpose.

FRUITS UNDER GLASS.

By W. J. GUISE, Gardener to Mrs. DEMPSTER, Keele Hall, Newcastle, Staffordshire.

MUSCAT VINERY.—When Muscat vines commence to flower, a temperature ranging from 65 to 70 must be maintained at night. Difficulty in growing Muscats can usually be traced to insufficient heat at the flowering period, which prevents the fruits from setting, and leaves the bunches thin and straggling. During the daytime the thermometer may range from 85° to 90°, with a rather drier atmosphere. This will allow the pollen to ripen, and it can be distributed by lightly shaking the rods or tapping the wires. Gradually increase the top ventilation as the sun gains power, while a little air through the top ventilators at night will assist the development of the fruit. So long as the laterals do not touch the glass there need be no hurry in tying them down; the flowers will require all the light available. Directly the berries are set, atmospheric moisture should be increased and the house closed early in the afternoon, so as to raise the temperature to 90° by sun-heat. The paths and borders should be freely syringed just before the house is closed. Examine the borders, and if they are in need of moisture the opportunity should be taken to wash in a light sprinkling of Le Fruitier manure with tepid water, or to apply diluted liquid manure. Thin the bunches and berries in the early stages. Pinch the laterals two leaves beyond the bunches, and stop all sub-laterals at the first leaf. Muscat vines are very liable to scorching: in case of bright sunshine it is advisable to spray a thin mixture of lime-wash over the glass.

PEACH TREES IN POTS.—The early trees are now well through the stoning period, and more warmth may be provided, not by fire-heat, but by closing the house early. The trees will require frequent syringing. Vary the diet when feeding, for fruit trees readily respond to a change of food. Admit light and air wherever possible by periodically pinching the laterals. A drier atmosphere must be maintained when the fruits commence to colour, but, although syringing must be discontinued, the trees should not be permitted to suffer for lack of moisture at the roots. Ventilate the house freely, night and day, while the fruits are ripening.

FIGS.—Directly the fruits of early pot Figs show signs of ripening, a warm, dry atmosphere will be necessary to give the final finish and flavour. Syringing must cease, and only sufficient water be given to keep the plants in a healthy condition. The house may be damped down during the hottest part of the day, and every precaution taken to keep the foliage free from red spider. Cuttings rooted early this year will now require more root space, and should be shifted, or they will become pot bound. By careful pinching build up sturdy, short-jointed plants for fruiting next year.

THE FLOWER GARDEN.

By R. P. BROTHERSTON, Gardener to the Earl of HOPETOUN, Tyninghame, East Lothian.

SWEET PEAS.—Sweet Peas planted in pots or boxes should now be transplanted in the open. Give them an ample space. A dressing of superphosphate along the rows will give the young plants a fine start. Always provide supports from the outset, placing dead Spruce branches close to the plants, and outside the ordinary Pea-sticks.

SPANISH IRISES. These are now making rapid growth, and will require a surface dressing of soot, pigeon manure, superphosphate, and sulphate of ammonia. They should also be weeded, as weeds are growing among them for the last time. Last year I had a crop of early Potatoes from among the plants, and this year Broad Beans have been planted among them. The plants are too valuable for their flowers to be destroyed, and it does them no harm to crop among them, provided close cropping is not attempted.

EDGINGS.—Permanent edgings of Cerastium tomentosum will need hard clipping before the flowers are produced, to keep the plants thick and the foliage well coloured. An occasional slight trimming throughout the season will also be advisable. Hypericum calycinum used for a similar purpose also needs an annual cutting in to keep it neat; after a hard winter it may require to be cut to the ground. Aubrietias should be cut well in after flowering.

MIXED BORDER.—Now that the spring-flowering bulbs are over, a surface dressing of superphosphate of lime applied equally over all the border will be of much service to the later classes of border plants. Apply in dry weather, and run the Dutch hoe through all bare spaces immediately after sowing the manure. Seeds of annuals, plants of Pansies, Violas, Gazania splendens, Verbena verosa, Salvia patens, Lavatera Olbia, Chrysanthemums, and shrubby Veronicas may be used to fill vacancies, and all may be put in the border now, leaving spaces for tall Ageratums, Snapdragons (if not ready), Verbenas, Cuphea and Dahlias to be planted later.

HERBACEOUS PAEONIES. No delay should occur in placing the stakes by large herbaceous Paeonies and tying them firmly. The simplest and most effective method is to place the required number of stakes (five to seven) all round the plants, sloping outward, and tie a piece of stout string round the top of the stakes—one strand is sufficient. If once the shoots are beaten down by rain it is impossible to induce them to regain an upright position, hence the supports should be applied at once.

VIOLETS.—It is not yet too late to make new plantations of Violets, which, at least in the North, are not long past producing flowers. Quantities are grown here at the base of walls, and flowers are to be found sparingly from November until the usual flowering time in March. The Violet appreciates a liberal dressing of cow manure. Strong-growing varieties, such as Princess of Wales, should not be planted closer than 15 inches apart. Plenty of runners are available at this time for planting, further treatment being the application of water until new roots are made. Double varieties can be transplanted in autumn from the batch grown for forcing.

THE APIARY.

By CHLORIS

SWARMS AND SWARMING.—Where food is plentiful and the stocks are strong, early swarms may be expected. This generally happens where the Apple trees are in full bloom, usually from the middle or end of May or beginning of June. People who have never seen a hive at swarming-time are at a loss to know the signs. The first condition is a very crowded state; next, the presence of drones in plenty, and on examination queen cells may be found. Sometimes drone cells are mistaken by the beginner for queen cells. Worker and drone cells are horizontal; the former are the small ones, and number five to the inch, while the drone cells protrude further, and number four to the inch. Queen cells are generally found round the edge, or in a nook in the comb; they point downward, are much larger than the other cells, and when sealed are very much like an acorn in shape. On examining the hive, should the queen cells be capped, a swarm may be expected any fine day between the hours of 12 and 5 summer time. Rainy and cold weather will effectually prevent the issue of a swarm. In this case the more forward queen cells are often destroyed, and the occupants killed by the reigning queen. In some instances all the queen cells are destroyed and swarming abandoned for the whole season. When a swarm issues there can be no doubt about the fact, for the air in the vicinity of the hive is simply alive with bees. After the bees have flown to and fro for some time they begin to settle, often on some low-lying bough, but occasionally in almost inaccessible places. The first swarm rarely settles higher than some low bush, but later swarms, headed by the new queens, may settle anywhere, or even decamp. If the bees show little or no sign of settling, the process may be accelerated by using a syringe and driving the water high in the air over the bees to imitate a shower of rain.

HIVING THE SWARM. When a swarm has clustered, a little water from a syringe will make them cluster tighter. On the ground place a piece of cloth or a sack immediately below the bees, place the skep or other receptacle under the bees, give the bush or branch a sharp shake, and the bulk of the bees will fall into the skep. Those on the cloth will soon run into the over-turned hive, if plenty of open space be allowed by resting one edge of the skep on a brick or stone. If the day be hot, the bees should be sheltered from the sun by means of a leafy branch or an umbrella. They should remain until 6 or 7 p.m., when they will be ready for transfer to their permanent quarters. When bees settle on a wall they should be removed to the skep with a stout goose-quill. If they settle on a thick hedge, place the skep above the swarm and use a little smoke to make them rise.

HIVING.—Having fitted up the hive, with frames and foundation quite safely secured, place a board on the alighting board, cover it with a cloth, overturn the skep, and give the sides a sharp rap to dislodge the bees. They will soon run into the new home. Should the weather be bad, feed with honey or syrup, but if favourable put on some drawn-out shallow combs if the object be extracted honey, or drawn-out sections where comb honey is desired. There being no cells below, the bees will naturally go above, where cells are provided to store the gathered produce.

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

Special Notice to Correspondents.—*The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.*

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

Letters for Publication, *as well as specimens of plants for naming, should be addressed to the* **EDITORS. 41, Wellington Street Covent Garden, London.** *Communications should be* WRITTEN ON ONE SIDE ONLY OF THE PAPER, *sent as early in the week as possible, and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.*

APPOINTMENTS FOR THE ENSUING WEEK.

SATURDAY, MAY 4—
Nat. Auricula Soc. (Northern Section) Ann. Ex., Manchester.

TUESDAY, MAY 7—
Roy. Hort. Soc.'s Comm. meet. Scot. Hort Assoc. meet.

THURSDAY, MAY 9—
Manchester and N. of England Orchid Soc. Ann. Meeting.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 50.7

ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, *Thursday*, May 2, 10 a.m.: Bar. 30.2; temp. 50.5°. Weather—Dull.

Food Substitutes.

A note in *Nature*, April 18, 1918, in commenting on a recent article in the *Illustrated London News*, entitled "Our Ill-fed Foes," makes the useful point that we should mark, learn, and digest (whenever possible) the food substitutes which are being used in enemy countries.

The excellence of Nettle-tops as a substitute for Spinach is well known. Dandelion leaves make one of the best of salads, and their ground and well-roasted roots are said to be a good substitute for Coffee. Properly cooked, Sorrel is—at least, in the opinion of the present writer—superior to Spinach; but to cook it properly either the water must be changed several times to get rid of the superfluity of oxalic acid, or it must be blended in a purée with a "softer" vegetable, such as Orache. The Broad Bean tops usually pinched out and thrown away are, in the opinion of many, as good as Asparagus. The present scarcity of food is bound to lead to the systematic collection of many of the tuberous and rhizomatous plants, many of which are rich in starch, and it may well be that if we insist on stiff collars and shirt fronts we shall have to get them starched by means of the meal from Lords and Ladies or from the water Flags.

The nation is at last alive to the incredible thriftlessness which general pre-war cheapness had begotten.

A national Autolycus—the snapper-up of unconsidered trifles—is already at work under the euphonious title of the National Salvage Board. Already thousands of tons of fat which formerly was put to the nugatory use of choking sinks is being recovered and put to profitable use either for food or munition purposes, and as a result of this belated thrift vast quantities of glycerine—indispensable for the manufacture of explosives—have been produced.

Diseased Potatos, where not wanted for pig food, are, we believe, to be used for the manufacture of alcohol; and we know that the Horse Chestnut harvest of last year was garnered in order to serve as material for the manufacture of an essential munition of war. Even bacteria are being trained to scavenge for the benefit of mankind, and in particular to manufacture one of the food substances of which at present we have none too much.

Messrs. Lowe and Shawyer, of Hounslow, are setting an admirable example in economy by using peat to absorb night soil, and are preparing therefrom what is evidently a valuable and perfectly inodorous fertiliser to supplement the decreasing supplies of farmyard manure. Household waste collected by the Boy Scouts at Ilford is being supplied to farmers as supplementary food ration for pigs, and many municipalities are undertaking pig-keeping—bringing, as it were, the pigs to the only remaining plentiful supplies of food. The waste of the Liverpool market is, we believe, dried and made into food for stock, and thanks to the enterprise of Professor Barker, of Long Ashton, the Food Production Department were able last year to arrange for some of the Cider makers to convert pomace into cattle food, and surplus cider Apples into Apple jelly.

Certain seaweeds, long used by the Germans—and sometimes by others—to form a jelly basis for jam, are now being collected and used as substitutes for gelatine. In Germany Tobacco is made from Hops and Beech leaves, but it is said in the note above referred to that the best substitute Tobacco is made from dried Coltsfoot leaves; the new Budget may therefore compel some of us to resume the vasculum of our youth and collect Coltsfoot wherewith to smoke the pipe of war. Even cigars—suitable, we presume, for presentation—may be made therefrom.

The thrifty Belgian—an excellent judge of food—esteems highly the young shoots of the Hop. Well cooked, they make a dish the equal of Asparagus. Edible fungi have long been used and esteemed as food, and doubtless wherever in any locality there is to be found a person both enthusiastic and knowledgeable, the countryside can be made to provide many a cuponless meal, and not only the countryside but the seashore. Indeed, it would not be a bad plan to require of every visitor to the sea that he should catch one meal a day, for the harvest of the sea is, of all harvests, the most bountiful; and even close round our shores will yield much to the gleaner as well as to the professional reaper.

Some of our museums are doing excellent work in holding exhibits of native edible weeds; and if demonstrations on how to cook them were also to be given periodically, those whose thriftiness is awakening under the stress of scarcity would be very grateful.

If we were not all Directors nowadays, we would venture to suggest that a Director of Food Substitutes should be appointed, with the condition that he should act as the people's taster: sample what he preached, and not, like Redi, "never drink the wines he vaunted" . . . We invite our readers to contribute to the list of food substitutes in order that the knowledge possessed by the individual may be made available to all.

BOTANICAL MAGAZINE.—PAEONIA PEREGRINA, TAB. 8,742.—This handsome, scarlet-flowered Paeony has several synonyms, including P. lobata, P. decora, and P. romanica. The *Botanical Magazine* states that Baker described the plant in *Gard. Chron.*, 1897, Vol. XXII., p. 10, under the name of P. decora, but this is an error, and we can find no reference to the plant in any of the issues of the year mentioned. Miller, who is the authority for the name, does not seem to have been closely acquainted with the plant, for his herbarium sheet under the name P. peregrina bears two small specimens, both differing, of which one appears to be P. monticola, figured in the *Bot. Mag.*, tab. 1,050, as P. peregrina. The confusion is probably due to Miller's having only known the plant from figures given by earlier writers. The species is a native of the Balkan peninsula, and does not appear to be common in English gardens. As it flowers profusely and is easy of cultivation, it would be very suitable for the herbaceous border.

PTERIDOPHYLLUM RACEMOSUM. TAB. 8,743.—Pteridophyllum is a monotypic genus, the solitary species of which is a native of the mountains of Central Japan. The plant has proved quite hardy at Kew, and the Fern-like foliage is its most decorative feature. The inflorescence, forming an erect raceme, with small, rounded white flowers, which soon drop, is apparently too fugitive to be a conspicuous feature.

MACODES SANDERIANA. TAB. 8,744.—This handsome Orchid was first described by Kraenzlin in *Gard. Chron.*, Oct. 26, 1895, p. 484, under the name of Anoectochilus Sanderianus. The ovate, crenulate leaves are reticulately veined with yellow on a greenish-brown ground.

INDIGOFERA PENDULA. TAB. 8,745.—A new Chinese Indigo, first found by the late Abbé Delavay in Yunnan, China. In May, 1906, Mr. Geo. Forrest sent home seeds, some of which were raised at Kew. The raceme of flowers is about 18 inches long, and the pinnate foliage is nearly as long. The species appears to be as hardy as other cultivated Indigoferas, and may be easily increased by means of cuttings.

AGAVE FOURCROYDES. TAB. 8,746.—This is an old garden species, and has been known under various names. It was described by Baker in *Gard Chron.*, Sept. 29, 1877, p. 397, under the name of A. Ixtli var. elongata. The plant is a native of Yucatan, and yields a valuable fibre resembling Sisal hemp. The tall, pyramidal inflorescence is composed of bunches of greenish-yellow flowers.

RHODODENDRON PROSTRATUM. TAB. 8,747.—A charming little Rhododendron from China forming a prostrate shrub 2 to 4 inches high, with a trailing habit, which renders the plant suitable for the rock garden. It is described as one of the most distinct and beautiful of the dwarf Rhododendrons in cultivation. The flowers are mauve-pink.

ECHEVERIA SETOSA. TAB. 8,748.—This new species, which is readily distinguished by the setose leaves, was discovered in 1907 by Dr. Purpus in Southern Mexico. It is tender, and

needs greenhouse cultivation in this country. The plant flowers regularly, producing arching spikes of dark red flowers tipped with yellow.

PETUNIA INTEGRIFOLIA. TAB. 8,749.—Commonly known in gardens as P. violacea, this species has proved a veritable trap for botanists, who have given it at least nine names under five different genera. In consequence of the confusion which reigned, the Kew authorities made frequent attempts to obtain the importation of the true species from South America, and were at last successful in obtaining seeds. The flowers are attractive, being bright rosy-purple, which, however, becomes paler with age. The plant is as easy of cultivation as the majority of Petunias raised from seed.

RHODODENDRON BRACHYANTHUM. TAB. 8,750.—A small-flowered, yellow species, regarded by some botanists as a form of R. sulphureum. The species was discovered by Mr. GEO. FORREST in China, and specimens, raised from seed sent home by him, flowered in Mr. J. C. WILLIAMS' garden at Caerhays. The plant does best in partial shade, and so far has proved hardy.

ASPARAGUS FALCATUS. TAB. 8,751.—A wild garden plant, which has been long in cultivation in gardens in this country, and sometimes confused with A. Sprengeri. Both species have flattened cladodia and racemose inflorescences, but in A. Sprengeri the cladodia are straight and not falcate. A specimen in the temperate house at Kew, forms a screen 30 feet high, clothing a staircase at the northern end of the building. The flowers appear in June, and their honey-like fragrance pervades the whole building.

NARCISSUS CRIMSON BRAID.—Modern developments in the Daffodil have broken down the dividing lines between what were formerly very distinct groups of these beautiful spring flowers. True poeticus varieties are numerous, and every year cross-breds between Poets' and Barrii Daffodils are shown by raisers, and in the majority of these hybrids the tendency seems to reduce the Barrii and exalt the Poets' varieties. Messrs. HERBERT CHAPMAN, LTD. have been successful in obtaining choice varieties, and their Crimson Braid, illustrated in fig. 83, though classed as Barrii is much nearer the Poeticus section. It is a flower of beautiful form, firm texture, and rich colouring, whilst the plant appears to have plenty of vigour, giving promise of being a useful market variety. The perianth segments are regular in outline, rounded, and deep, solid, glistening white, while the cup is apricot yellow with a deep rim of rich, bright crimson of the tone known as mandarin red. The frilling or plaiting of the cup and its wide rim of deep colouring doubtless suggested the descriptive name of Crimson Braid. The Narcissus Committee of the Royal Horticultural Society gave the variety an Award of Merit on the 23rd ult. and it had previously received an award at Birmingham.

KEW GUILD JOURNAL.—The *Journal* of the Kew Guild for 1918, though very rightly abridged in these days of paper shortage, is nevertheless as interesting as usual. The frontispiece is a first-rate portrait of Mr. J. A. GAMMIE, the President-elect for the present year, whose extraordinarily good work in regard to Cinchona cultivation in Sikkim is described by the Director of Kew, Sir DAVID PRAIN, in an appreciative notice. Mr. GAMMIE was born on Kincardineshire on November 12, 1850. He was appointed in August, 1865, manager of the young and struggling Cinchona plantations in Sikkim. Not only was Mr. GAMMIE successful in overcoming the difficulties of cultivation, but in association with chemists in London he assisted very materially in designing the process of extracting as a mixed febrifuge all the alkaloids in the bark. This was, of course, before a method of separating quinine had been devised. Sir DAVID PRAIN says that but for Mr. GAMMIE the humane object of the Indian Government to place quinine within the reach of the poorest would not have been realised so early and so effectively as it was. After eleven years spent in working and improving this process, Mr. GAMMIE retired in 1897. Besides Sir DAVID PRAIN'S article there are a number of interesting letters from Kew men serving in the Forces, the letters collectively representing all the various "Fronts." We note that in 1915 three members of the Kew Guild were added to the "Roll of Honour," in 1916 six, and in 1917 seven. Obituary notes and portraits of those who lost their lives in 1917 are contained in the present issue. The editor, Mr. OSBORN, is to be congratulated on the excellent manner in which the interest of the journal is maintained.

DEVON PRODUCE SOCIETY.—At a meeting recently held at Exeter Castle, under the presidency of Sir HENRY LOPES, a society was formed under the name of the Devon Garden Produce Society, Ltd. For the first season the work is expected to be largely educative, consisting of guiding allotment holders and other small growers in their choice of which crops to grow and how to produce the maximum of food from the ground at their disposal. Local centres will probably be formed for the collection and disposal of surplus produce, but it is not intended that the society shall become a trading association in the ordinary sense.

PRICES OF FRUIT.—With a view to maintaining the production of jam the Food Controller has decided to fix maximum prices for all English-grown fruit required for this purpose. As it is not possible to fix these prices until some estimate can be formed of the probable crops in the country, the Food Controller gives notice of his intention to cancel any contract for home-grown fruit existing at the time when such Orders are issued, except in respect of deliveries completed before the date of the Order. It is also his intention to fix maximum prices for fruit pulp, after due regard has been given to the average price of fruit on the one hand and the controlled price of jam on the other hand.

WAR ITEMS.—Mr. C. RALPH CURTIS, the only son of Mr. CHARLES H. CURTIS, secretary of the British Florists' Federation and formerly editor of *The Gardeners' Magazine*, has been gazetted 2nd Lieut. in the King's Royal Rifles. Lieut. CURTIS, who before the war was with Messrs. JAS. CARTER AND CO., enlisted in the Coldstream Guards, and was on service in France with his battalion in 1915.

—— Mr. HUGHES, Floral Nursery, Kirkealdy, has received news of the death in action, on March 25, of his oldest son, Second Lieutenant WILLIAM HUGHES, Manchester Regiment. Lieut. HUGHES was in the Territorial Regiment of the Black Watch at the outbreak of war. He served at the Front for some time, and was afterwards gazetted second lieutenant in the Manchesters.

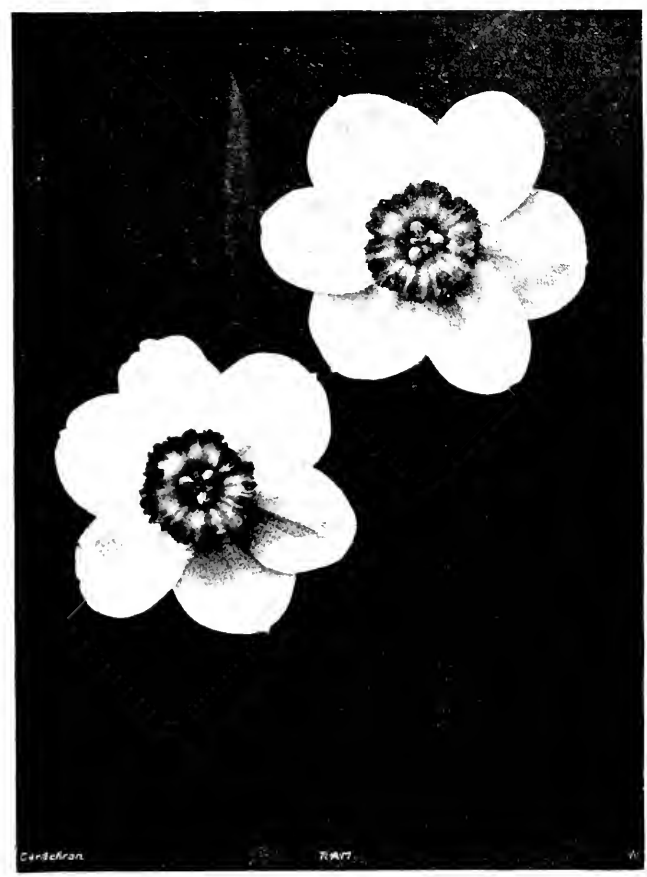


FIG. 83.—NARCISSUS CRIMSON BRAID.

PUBLICATIONS RECEIVED.—*Roses and How to Grow Them.* By Edwin Beckett. (London: C. Arthur Pearson, Ltd.) Price 2s. 6d. net.

ON INCREASED FOOD PRODUCTION.

SEED-SOWING—ONIONS AND CARROTS.

IN these days of shortage of many things, including seeds, it behoves all engaged in horticulture to see that the maximum amount of produce is obtained from the seeds used. Waste of seed sometimes results from too early sowing. There is nothing gained by sowing weeks before the soil is sufficiently warm to promote germination. With regard to Onions, it is most important that seed should not be sown until the ground is in perfect order. The object in view should be to get the seeds well in a firm seed-bed, with a light, loose layer of soil above them. Moisture rises through the firm seed-bed to the point where the seeds rest, where it is arrested by the loose surface layer, which acts as a mulch. The seeds thus readily absorb the necessary moisture, while warmth and air are freely supplied from above. Where the whole surface is consolidated there is a danger of the top layer, which contains the seeds, becoming a hard, dry cake. We may learn much by carefully noting the conditions we obtain when sowing in boxes, which generally secure a good germination, and applying the same rules as far as possible out-of-doors. When sowing in boxes the best method is to fill with soil firmly almost to the top, secure a level surface on which the seed is sown, then, before covering, use the presser (a flat piece of wood) firmly, finally covering with a quarter of an inch of fine soil, left quite loose; this method secures the simultaneous germination of practically every seed. To apply this principle to outside sowing, the ground should be worked down (after any dressings of fertilisers have been applied), all lumps broken, and the whole consolidated, leaving the surface very fine and loose. The drills should be very shallow. After sowing the seed thinly, tread along the line, depressing the row sufficiently to admit of a covering of about a quarter of an inch of fine soil, which is brought into place evenly with the back of the rake. The nature of the soil should always govern the procedure, but the foregoing will suit especially those soils liable to form a cake on the surface, through which the slender growth of young Onions can not break, or, at least, do so very irregularly. With very light soils, treading, both before and after covering the seed, or even rolling heavily, is advantageous, but even then it would be advisable to use the rake lightly, as a loose surface, however shallow, tends to increase the moisture available to the seeds. Should dry weather follow seed-sowing, other small seeds, besides Onions, will germinate better if covered lightly with a loose layer of soil, but they must not be in this loose layer (which will quickly dry), but immediately below it.

Carrot-seed may be economised by mixing it with dry, fine soil, which prevents it from being blown away. Additional sowings may be made of the seeds thus saved on any available ground, none of which should be idle this year. Sowings of Carrots may be made at intervals up to the end of July, following other early crops. The late sowings will provide a valuable addition to supplies. Early varieties of the stump rooted sorts should be used. *S. A.*

CELERY.

SELECT an open, sunny situation for Celery where the soil is not too stiff, but it will not matter if it is poor, as rich soil is only needed in the bottom of the trenches. Poor soil answers well enough for earthing-up, and is generally free from worms. Make the trenches from 2 feet to 4 feet wide, to hold two rows. From 9 inches to 1 foot is a good depth. Put the soil up in neat ridges between the trenches, and plant the tops at once with Lettuce or sow with Spinach. The earliest-raised plants of Celery may then be put into the trenches. Dig a large quantity of manure into the bottom, then lift the plants with as much soil attached to the roots as possible, and set them well into the soil, watering thoroughly immediately the planting is finished. Late plants now in their seed quarters should be placed 2 inches or 3 inches apart in rich soil in a cool frame or under a handlight. Do not allow them to become dry at the roots, and ventilate the frame freely.

BEETROOT.

TWO mistakes are frequently made in growing Beetroots. One is sowing too early, and the other is putting the seeds in soil that has been recently and heavily manured. If the first sowing takes place within the present week it is quite early enough, especially if the soil has been well and deeply dug, selecting a plot which bore last year a crop to which manure had been supplied in fair quantity. Sow in drills at least 1 foot apart for all the medium-sized early varieties, but if larger sorts of the market type are grown, 15 inches should be allowed. Sow thinly, and as soon after germination has taken place as possible, remove the more weakly plants or those not required, leaving those for the crop at 9 inches apart. If growth is not satisfactory, encourage the plants with artificial manure, especially superphosphate and either nitrate of soda or sulphate of ammonia, the latter giving the better results in soils which contain a moderate amount of lime. *J. J. Price.*

SUMMER SAVORY.

HABIT or tradition allows dried Mint to appear on the table when Pea soup is served. We find that Summer Savory is preferable, or at any rate useful, for a change, and may be used to give a fillip, as the mood of the moment may determine, to a stew or hot pot. The sugar caster may thus remain in use in these days. Various blends of different dried herbs may be used. Summer Savory raised without heat is hardly ready for the first Broad Beans, and what self respecting cook will serve Broad Beans if she is not supplied with a sprig of it? Last year some few plants did not blossom, for they were growing in poor soil; they have come through the winter well, and will supply a bouquet for the early Broad Beans (which were planted out in February under the "Red Cross stretcher shelter" described in *Gard. Chron.*, March 2, 1918). The plants began to blossom on April 22, though only about 14 inches high. The conclusion I arrive at is that Summer Savory should be sown in late summer and wintered; it will then be ready for the earlier Beans, without any start in artificial heat. *H. E. D.*

DUTCH BROWN BEANS.

LARGE quantities of Dutch Brown Beans will doubtless be grown during the coming season, both for private use and commercial purposes. We grew this Bean successfully at Aldenham last year, under several conditions. The most satisfactory method was sowing the seeds in boxes during the second week in May, raising the plants in a gentle warmth, and planting them out in a sunny position in well prepared ground at the end of that month, allowing a distance of 2 feet between the rows and 10 inches from plant to plant. This system has much to recommend it over sowing in the open. The seeds germinate better, are much more under control from injury by slugs and late spring frosts, and, in addition, the plants mature earlier and the crop of seed ripens in the best summer weather. When sufficiently ripe, the plants should be pulled up, tied in bunches by the roots, and hung in an airy shed to dry, when the pods may be shelled at convenience and the Beans stored for winter use as required. The growth of the plant is about that of the ordinary French Bean. *F. Beckett.*

HOME CORRESPONDENCE.

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

ANEMONE PULSATILLA (see pp. 163, 179).—Anemone montana and A. Pulsatilla are quite distinct, even in the wild state, and can be recognised even when not in flower, once you know the true plants. However, it seems that the Anemone Pulsatilla of gardens is more or less a hybrid, having blood of either montana, Halleri or patens, as practically all the species of the Pulsatilla group cross fertilise easily. Your correspondent on p. 163 is quite right with regard to the leaves, but he did not mention the darker colour of the leaves and stems of a violet shade, and the more ferulike appearance. Professor Schinz, in *Flore de la Suisse*, mentions Anemone montana as to be found in the southern Alps, with a white and a pink form near Sion, and Pulsatilla in the northern Alps and the Jura. Thomas, in *Flora von Mittelcuropa* writes in a similar strain. Anemone patens Linn is found near Munich, and is a glorified A. Pulsatilla. Messrs. Regel and Kesselring, Petrograd, distributed a yellow and pink form; they also offer Anemone Pulsatilla chinensis, which is practically identical with A. Pulsatilla Mrs. van der Elst figured in a coloured plate in *Gard. Chron.*, Jan. 25, 1913. A Continental author mentions the following hybrids as occurring in a wild state: A. nemorosa × ranunculoides; A. patens × pratensis; A. patens × vernalis; A. patens × Pulsatilla; A. pratensis × vernalis; A. pratensis × Pulsatilla; A. vernalis × Pulsatilla. None of the American varieties of the Pulsatilla group has flowered here. *E. Riehls, Wood Road, Coleshill.*

FOOD CROPS AND THE PROTECTION OF BIRDS. The serious diminution in the numbers of our resident insect-eating birds, which resulted from the severe winter of 1916-17, and also from the widespread destruction of birds and eggs in the summer of 1917, is a cause for grave anxiety at the present time. Plagues of insect-life of various kinds were reported in the summer and autumn from many districts, and but for the services of summer migrants would have proved alarmingly destructive to Corn, grass, green crops and fruit. This year a greater danger faces us. Under the most favourable conditions it must be some years before many of our small birds regain their normal status. The continual ploughing up of old grassland multiplies insect pests; the increased crops afford them increased food and thus stimulate the hatching out of countless swarms. Owing to these circumstances the protection and preservation of insect-eating birds, and of those birds which destroy small vermin, is a matter of urgent necessity. All who have studied economic ornithology and entomology are agreed that the great majority of wild birds are beneficial to man. *Royal Society for the Protection of Birds.*

TULIPA SAXATILIS (see p. 164).—As my experience with this plant differs entirely from the treatment recommended by Mr. Dykes, I venture to give it. In November, 1908, I planted 12 bulbs in front, but outside of, an open verandah facing south, in ordinary garden soil. The bulbs have never since been disturbed. I had to wait four or five years before I had a bloom, but since then the plants have flowered freely every season, and I have just counted 28 buds, some on the point of opening. Each flowering stem usually bears two flowers, but one of mine has three. *Alfred O. Walker, Ulcombe Place, near Maidstone.*

SCARCITY OF PEAR BLOOM (see pp. 170, 179).—In reference to Mr. Beckett's remarks concerning the absence of blossom on Pear trees, I may say that similar conditions prevail in these gardens. The majority of Pear trees are quite bare of bloom, while other fruits, Plums, Damsons, and Cherries, are a mass of blossom. Even trees of Fondante d'Automne, which have done well consistently for many seasons past, are singularly poor in prospect. Apples show great promise, after bearing heavily last year. All the trees here are young, having been planted by me during the past 10-12 years. *F. W. Spencer, Tockenham Manor Gardens, Swindon, Wiltshire.*

SOCIETIES.

NATIONAL AURICULA AND PRIMULA (Midland Section).

APRIL 26, 27.—Although the nineteenth annual show of Auriculas, held at the Botanical Gardens, Edgbaston, on the above date, was less extensive than in many previous years, and the size and quality of the flowers below the Birmingham standard, the show, on the whole, was a success. Alpine varieties were shown in better condition than the show varieties, which were generally undersized and lacked finish. Of the first-named section, four new varieties gained first-class certificates, against two certificates awarded to show varieties. All the exhibitors were Midland growers, and, with one exception, entries were made in all the thirty-one classes, in two of which there were seventeen entries in each, and in another, fourteen. The weather was fine, and there was a record number of visitors.

Mrs. WINN was the most successful exhibitor; she won the silver medal offered by the Birmingham Botanical and Horticultural Society, the bronze medal of the Society being awarded to Mr. H. W. MILLER. The silver medal offered by Mr. James Udale was won by Mr. E. KENWRIGHT, whilst the two Lindley silver medals for show and Alpine Auriculas were won by Mr. J. T. PLANT and Mr. J. D. WILLIAMS respectively.

The premier flowers were as follows:—Show Auricula George Lightbody, shown by Mrs. WINN (gr. Mr. T. T. Sheppard); seedling show Auricula W. H. Parton, shown by Mr. H. W. MILLER; Alpine Auricula Phyllis Douglas, shown by Mr. J. FREEMAN; Alpine seedling Auricula Tom Stevens, shown by Mr. H. W. MILLER.

First-class certificates were awarded to yellow show Auricula Mary Winn, shown by Mrs. WINN (gr. Mr. T. T. Sheppard); grey-edged show Auricula W. H. Parton, shown by Mr. H. W. MILLER; Alpine Auricula Woodfield Sheppard (light centre), shown by Mrs. WINN (gr. Mr. T. T. Sheppard); Alpine Auricula Kathleen Muir (gold centre), shown by Mr. J. D. WILLIAMS; Alpine Auricula Dora (gold centre), shown by Mr. J. D. WILLIAMS; and Alpine Auricula Tom Stevens (gold centre), shown by Mr. H. W. MILLER.

SHOW AURICULAS.

Mrs. WINN, Selly Park (gr. Mr. T. T. Sheppard) won 1st prizes in classes for (1) eight varieties, (2) six varieties, (3) three selfs, (4) three varieties reserved for local growers, (5) one grey-edged variety, and (6) one self variety.

Mr. H. W. MILLER, Handsworth, was awarded prizes in the two first-named classes. Mr. J. T. PLANT showed the best four varieties, as well as the finest green-edged variety. Mr. RICHARD HOLDING, Bournville, exhibited the best pair of varieties. The same exhibitor also had the best of fourteen entries in a class for one self variety. The best white-edged variety was shown by Mr. J. FREEMAN. The most successful maiden grower was Mr. W. W. FREEMAN.

ALPINE AURICULAS.

The 1st prize in a class for eight varieties, and in another for a single plant possessing a gold centre, were won by Mrs. WINN (gr. Mr. T. T. Sheppard). Mr. H. W. MILLER led in classes for (1) six varieties, (2) one plant having a light centre, and (3) three varieties in a class for local growers. Mr. J. T. PLANT excelled in the class for four varieties, and Mr. J. D. WILLIAMS was successful in a class for a pair of plants. Mr. G. W. ROE took first place among maiden growers, and Mr. E. KENWRIGHT led in a class reserved for young amateur growers.

SEEDLING SHOW VARIETIES.—Mr. H. W. MILLER staged the best pair of plants, his varieties W. H. Parton and Cordelia were very good. The same exhibitor also showed the best grey-edged variety. Mrs. WINN was awarded the 1st prize in a class for one white-edged variety.

SEEDLING ALPINE VARIETIES.—Mr. J. D. WILLIAMS had the leading four varieties. Mr. H. W. MILLER was placed 1st for (1) two varieties, and (2) one gold-centred variety. Mr. RICHARD HOLDING showed the best light-centred variety.

HONORARY EXHIBITS.

A *Silver-gilt Medal* was awarded to the Misses POPE, King's Norton, for Daffodils; a *Silver Medal* to Mrs. WINN, Selly Park (gr. Mr. T. T. Sheppard), for Schizanthus and Antirrhinums and a *Bronze Medal* to Mr. C. S. YEOMANS, Hollywood, for Polyanthuses.

SCOTTISH HORTICULTURAL.

APRIL 2.—The monthly meeting of this Association was held at 5, St. Andrew Square, Edinburgh, on this date, Mr. Robert Fife, President, in the chair.

A lecture on "Allotment Pests" was given by Dr. W. G. SMITH, Edinburgh and East of Scotland College of Agriculture.

An exhibit of *Cineraria Maritima* and seedling Pentstemons was staged by Mr. McHATTIE, Superintendent of the Edinburgh Public Parks.

ANCIENT SOCIETY OF YORK FLORISTS'.

APRIL 20.—On this date the Ancient Society of York Florists, one of the oldest and most interesting societies of the sort, celebrated its 150th anniversary, having been established, according to records still in existence, on April 20, 1768. From that date the Society has been carried on without a break by succeeding generations of enthusiastic florists, and it is one of the oldest floricultural societies in the country.

The first show of the Society was held a week from the date of its inauguration on April 27, 1768. The prizes, apart from the cups and silver spoons and goblets, included pieces of plate, value 5s. 6d. each, and in 1770 Gooseberries were first shown, prizes being given for the exhibit with the best number of berries to the pound and also for the largest berry. The Gooseberry Show was discontinued in 1833. In 1856 Polygoneums were shown for the first time, and in 1859 Dahlias were admitted, the shows gradually being thrown open to the exhibition of practically all classes of flowers.

LAW NOTE.

DAMAGE TO A MARKET GARDEN BY SUBSIDENCE.

In the Outer Division of the Scottish Court of Session judgment has been given in an action brought by Mr. Thomas C. Gibson, market gardener, West Thorn, London Road, near Glasgow, against Mr. A. J. Crawford, Earle, Lanarkshire, and the Earnie Coal Company, for payment of £2,600 as damages caused by coal workings under his market garden, and also for interdict against the defenders working coal and other minerals there. Lord Ormidale gave decree against the defenders for £1,200, with expenses, but, as the action for interdict was not insisted upon, dismissed that part.

CROPS AND STOCK ON THE HOME FARM.

SUCCESSION OF CROPS.

Following a crop of late Turnips eaten off by sheep in March it is usual to sow Oats or Barley. Where, however, the root crop was poor owing to such influences as late sowing, poorness of soil, or the Turnip plants being infested with Charlock to such an extent as to cripple their growth, it would not be wise to sow corn. In such cases adopt one of the following methods:—Summer fallow, clean the ground of Couch if present, apply farmyard manure in September, plough, press if light soil and sow with Wheat. An alternative method would be to plough and clean the land and sow Mustard broadcast in July, at the rate of 20 lbs. per acre. Plough in the crop early in October and sow with Wheat. This latter is a good plan to adopt where sheep are not kept to require the Turnips. A crop of Mustard is one of the best methods of preparing land for Wheat. Two pounds of Rape drilled with 1 lb. of Pomeranian White Turnip is ample seed. Some broadcast the seed as being easier, but I do not approve of this method, especially in soil which is liable to Charlock growth, as no means exist by which the Charlock plant can be removed. When, however, the seed is drilled, horse-hoeing is easy, and the stirring of the surface soil accelerates the growth of the Rape and Turnips. If the plant does not start into growth vigorously, sow 2 cwt. of sulphate of ammonia per acre evenly over the crop.

WEEDING THE CORN CROPS.

The eradication of weeds in Corn is, I hear, much neglected, but it is not wise to allow Docks or Thistles, for example, to remain, as they are detrimental to the sale of the straw. Some persons cut off the crown of Docks with a weed hook, but this produces treble crowns and naturally more seed. A two-pronged prong is the best tool with which to root them up, and when found they are brushed with. Thistles should be cut off with weed hooks; cutting the plants down weakens their growth and prevents their seeding. Scabious is a bad weed among Corn, and it increases rapidly.

SWEDES.

This root crop is important to the cowkeeper and sheep farmer. For the former, Swedes in October following Turnips in August and September form a valuable food, increasing the milk yield considerably. For fattening cattle the Swede Turnip is the most valuable of all roots, whilst to the sheep farmer with ewes and lambs in March, April and May, a full Swede crop is a boon. For a flock of 100 ewes and as many lamb I always try to have at least thirty acres of Swedes.

If the land has previously carried a straw crop, is free from weeds, and was autumn ploughed, 1 cwt. of superphosphate, 30 per cent. strength, will grow a full crop of Swedes. In southern counties Swedes suffer much from mildew if the seed is sown before the middle of June and a spell of dry weather sets in in July. It is not wise either, to follow Turnips with Swedes. I have seen much rotting of the roots of the latter before Christmas when sown after a Turnip crop.

Ploughing the land repeatedly before sowing the seed is important. In dry weather it is a good plan to sow the same day as ploughing is done; the soil then is more uniformly moist, ensuring a quick germination, which is all important, as the Swede plant should make free, quick growth from the start. When the soil is ploughed, left a day or two, then harrowed, rolled, and so forth, the surface becomes devoid of moisture, and as the seed is not drilled more than an inch or so deep, germination is slow until rain falls, which may not be for weeks, and thus the plant is retarded at the most critical period.

Directly the plants in the drills can be seen across the field, stirring the soil about the plants with the horse hoe, or even harrows drawn crosswise over the rows before thinning, will hasten growth. Two lbs. of seed per acre is ample, and 1 lb. of Rape seed. This I sow through one coulter of a five coulter drill. I find the lambs appreciate the extra green food this row of all Rape provides in the spring. The varieties of Swedes are numerous: Dunn's Defiance, Toogood's Purple Top, John Bull, and White Elephant are desirable sorts. *E. Molyneux.*

MANGOLDS FOR SEED.

In view of a possible shortage of mangold seed next year, the Food Production Department suggest that farmers having a surplus of mangolds at the present time should consider the desirability of planting selected roots for seed production. Sound, medium sized, well shaped roots should be selected, untouched by the trimming knife. The ground should be prepared by deep tillage and liberal manuring, and the roots planted at least 2 feet apart; if planted at a greater distance they suffer from beating by the wind. All roots planted should be sunk in the soil to their full depth, so that the crown shows just above the surface. The seed is usually ready for harvesting in September, and may be threshed out by flail on a sheet or on the barn floor. A yield of about 3 lb. per rod (30½ square yards) may be expected under favourable conditions.

MARKETS.

COVENT GARDEN, May 1.

Plants in Pots, &c. Average Wholesale Prices.

	s. d.	s. d.
All 48's, per doz.	7 0– 8 0	
Aralias	7 0– 8 0	
Araucaria excelsa		10 0–12 0
Asparagus plumosus	10 0–12 0	
— Sprengeri ...	9 0–10 0	
Aspidistra, green ...	36 0–42 0	
Boronia megastigma	18 0–24 0	
Cyclamens	24 0–24 0	
Cinerarias	10 0–12 0	
Erica persoluta ...	36 0–42 0	
— Wilhemenia ...	30 0 36 0	
Genistas	18 0–24 0	
Marguerites, white	9 0–10 0	
Mignonette ...	12 0–15 0	
Roses, polyanthus (rambler (each)	24 0–30 0	5 0–12 0

Ferns and Palms: Average Wholesale Prices.

	s. d.	s. d.
Adiantum cuneatum 48's per doz.	9 0–10 0	
— elegans	9 0–10 0	
Asplenium, 48's, per doz.	9 0–12 0	
— 32's	21 0–24 0	
— nidus, 48's ...	10 0–12 0	
Cyrtomium, 48's ...	8 0–10 0	
Nephrolepis, in variety, 48's ...		12 0–18 0
— 32's		8 0–12 0
— large 60's ...		4 0– 5 0
— small 60's ...		3 0– 3 6
— 72's, per tray of 15's		2 0– 2 6

Cut Flowers, &c: Average Wholesale Prices

	s. d.	s. d.
Anemone fulgens per doz. bun ..	4 0– 5 0	
Arums—		
— (Richardias), per doz. blms	9 0–10 0	
Azalea, white, per doz. bunches ...	6 0– 8 0	
Carnations, per doz.		
— blooms, best American var	3 0– 5 0	
Croton leaves, per bun.	1 3– 1 6	
Daffodils (single), per doz. bun —		
— Barri	2 6– 3 0	
— Emperor ...	4 0– 5 0	
— Victoria ...	4 0– 4 6	
Eucharis, per doz. blooms	3 0– 4 0	
Gardenias, per box (12's)	5 0– 6 0	
— (18's)	3 0 4 0	
Heather, white, per doz. bun....	9 0 12 0	
Iris, Spanish, per doz. bunches—		
— white	42 0 48 0	
— blue	42 0 48 0	
— yellow	42 0 48 0	
— mauve	42 0 48 0	
Ixia, red, per doz. bunches	2 6– 3 0	
Lilium longiflorum, long	9 0 10 0	
— — rubrum, per doz long ...	5 0– 6 0	
— — short, per doz blooms ...	2 6– 3 0	
Lily-of-the Valley, per doz. bun ...	30 0–42 0	
Narcissus, ornatus, per doz. bun.	2 0– 3 0	
— poeticus ...	3 6– 4 0	
Orchids, per doz; —		
— Cattleyas ...	18 0 —	
Pelargoniums, double scarlet, per doz bunches		12 0–18 0
— white, per doz. bunches ...		6 0– 8 0
Primroses, per doz. bunches ...	1 0– 1 3	
Roses, per doz blooms—		
— Frau Karl Druschki ...	3 0– 4 0	
— Generaldacquemond ...	2 6– 3 0	
— Joseph Lowe ...	4 0– 5 0	
— Lady Hillingdon	3 0– 4 0	
— Ladybird	4 0– 6 0	
— Liberty	4 0– 6 0	
— Madame Abel Chatenay ...	3 0– 6 0	
— Niphetos	3 0– 4 0	
— Richmond ...	4 0– 6 0	
— Sunburst ...	4 0– 6 0	
Star (allium), per doz. bunches ...	3 0– 4 0	
Stephanotis, per 72 pips	4 0– 4 6	
Stock, English, per doz. bunches ...	6 6– 8 0	
Sweet Peas, various, per doz. bun ...	0 6– 1 0	
Tulips, per doz. blooms ...		
— Darwin, various	1 6– 2 6	
— Single, white ...	1 6– 2 6	
— — Yellow ...	1 6– 2 6	
— — Pink ...	1 6– 2 0	
— — Red ...	1 3– 1 6	
Viola cornuta, per doz. bun. ...	3 6– 4 0	

Cut Foliage, &c.: Average Wholesale Prices.

	s. d.	s. d.
Adiantum (Maiden hair Fern) best, per doz. bun ..	8 0 9 0	
Asparagus plumosus, long trails, per half-dozen	2 6– 3 0	
— — medium, doz. bunches	18 0–21 0	
— Sprengeri ...	10 0–15 0	
Berberis, per doz. bun. ...		6 0– 8 0
Carnation foliage, doz bunches...	4 0– 5 0	
Cycas leaves, per doz.	3 0– 6 0	
Ivy leaves, per doz. bunches... ...	2 0– 2 6	
Moss, gross bun...	7 0– 8 0	
Smilax, per bun. of 6 trails ...	4 0– 4 6	

REMARKS. All white flowers are very scarce. Much prices are maintained for Lilium longiflorum and Richardias (Arums). The supplies of Carnations are sufficient for the demand, and the quality is generally good throughout. The cold weather is preventing an excessive supply of Roses, and prices are still high for the best blooms. Daffodils are also dearer, and prices advanced from 2s. to 4s. per dozen bunches during Friday and Saturday last. The better quality flowers now consist of Gardenias, Lapagerias, Stephanotis, and white and coloured Sweet Peas. Cattleyas are the leading line in Orchids. Spanish Irises are arriving in good condition, and prices are a little easier. Small consignments from the Channel Islands are arriving here on Mondays, Wednesdays, and Thursdays only. The chief kinds of Narcissi just now are Barri, Tulips, and Ixias. French flowers are fine in quality, and in quite satisfactory condition when they arrive.

Fruit Average Wholesale Prices.

	s. d.	s. d.
Apples:—		
— English, per bus.	20 0–45 0	
— Russets, French, in cases of about 60 to 70 lbs. ...	65 0–70 0	
Dates, per box ...	1 8 —	
— Arabian, per cwt.	42 0 —	
Figs, Worthing, per doz ...	4 0 12 0	
Grapes:—		
— Almeria, per doz. lbs. ...	36 0 —	
Grapes, con—		
— Black Hamburgh, per lb ...	2 0–12 0	
— Muscats per lb.	10 0–15 0	
Lemons, per case...	55 0– 80 0	
Melons, each ...	10 0 12 0	
Oranges, per case	40 0–120 0	
— new, seedless, per case ...	80 0 —	
Peaches, per doz. ...	12 0–24 0	
Strawberries, forced per lb. ...	4 0–10 0	
Walnuts, kiln dried, per cwt. ...	54 0–105 0	

Vegetables: Average Wholesale Prices

	s. d.	s. d.
Artichoke, Jerusalem per 1 bushel	1 3– 1 6	
Asparagus (English), per bundle ...	3 6– 6 0	
— Lauris	3 6– 6 0	
— outdoor, per bundle	3 6– 5 0	
Beans:—		
— French (Channel Islands), per lb.	2 0– 3 0	
Beetroot, per cwt ...	7 0– 8 0	
Carrots, new, per doz. bunches ...	4 0–10 0	
— per bag	8 0–10 0	
Cauliflowers per doz	4 0– 7 0	
Celery, per bundle	2 6– 4 0	
Cucumbers, per doz.	6 0– 9 0	
Endive, per doz ...	2 6– 5 0	
Garlic, per lb. ...	0 8 1 0	
Greens, per bag ...	9 0 –	
Herbs, per doz bun.	2 0– 4 0	
Horseradish, per bun.	3 6– 4 6	
Leeks, per doz. bun.	6 0– 8 0	
Lettuce, Cabbage and Cos, per doz	1 0– 3 0	
Mint, forced, per doz bun	4 0– 6 0	
Mushrooms, per lb.	2 6– 3 0	
Mustard and Cress, per doz punnets	1 0– 1 3	
Onions, French, per cwt. ...	40 0–42 0	
— spring, per doz. bun. ...	4 0– 6 0	
— Valencia, per case (4 tiers) ...	30 0–45 0	
— — (6 tiers) ...	30 0–45 0	
Parsley, per strike ...	2 0– 3 0	
Parsnips, per bag ...	6 0– 7 0	
Peas, per lb.	2 0 —	
— French, per lb. ...	1 0 —	
Potatos, new, per lb.	0 6– 7 0	
Radishes, per doz. bunches ...	2 0– 3 0	
Rhubarb, forced, per doz	2 0– 2 6	
— natural, per doz.	4 0– 6 0	
Seakale per punnet	2 0 —	
— outdoor, per box (abt. 14 lb).	10 0 —	
Shallots, per lb. ...	0 9– 1 0	
Spinach, per bus. ...	2 0– 2 6	
Swedes, per bag ...	3 0– 4 0	
Tomatos, per lb. ...	3 0– 3 6	
Turnips, per bag ...	12 0–14 0	
— new, per bunch	2 6 —	
Vegetable Marrows, per doz. ...	9 0–12 0	
Watercress, per doz	0 8– 0 10	

REMARKS. Supplies of English Apples are practically cleared. A few samples of French Russets are on offer ahead. A few samples of French Russets are on offer ahead. A few samples of English Black Hamburgh and Muscat Grapes are available. Supplies are increasing daily of home-grown Cucumbers. Good Tops from Worthing are on offer, and Melons are making their appearance. English and Channel Islands Tomatos are in ample supply. The following forced vegetables are also plentiful. The following forced vegetables are also plentiful: Asparagus, Mushrooms, Seakale, French Beans, Cucumbers, New Potatos, Mushrooms and Peas. Outdoor Seakale and Asparagus are also on offer. Supplies of Greenkale and Asparagus are also on offer. Supplies of Greenkale and Asparagus are also on offer. *Supplied by Messrs. Rigg & Co., Covent Garden Market, May 1, 1918.*

Obituary.

MR. WILLIAM MELVILLE.—We regret to record the death, on April 17, of Mr. William Melville, formerly gardener at Glenlee, New Galloway, Kirkcudbrightshire, who retired several years ago. Mr. Melville, who was in his 83rd year, died at Portalloch Gardens, Argyll.

J. C. WATT. We regret to announce the death, on the 15th ult., of Mr. J. C. Watt, head gardener, Central Queen Street Gardens, Edinburgh. Mr. Watt, who was seventy years of age, had occupied his position for 37 years, and was on duty the day before his death.

ALEXANDER MILNE. The death is announced, at the Edinburgh Royal Infirmary, of Mr. Alexander Milne, gardener to Lord Lamington, at Lamington House, Lamington, Lanarkshire. Mr. Milne was 67 years of age.

WILLIAM MERRILES. We learn with regret of the death of Mr. William Merriles, Edinburgh, a prominent member of the Scottish seed trade. He served his apprenticeship with Messrs. Roughhead and Park, Ltd., seedsmen, Haddington, and was associated with the firm for upwards of 50 years, in the capacity of one of the directors during the past ten years.

JOHN G. BARKER. Our contemporary, *Horticulture*, U.S.A., states that Mr. John G. Barker, Superintendent of Rosedale Cemetery, South Bend, Indiana, died on February 7, after a brief illness, at the age of 75 years. Mr. Barker was a native of Huntingfield, Suffolk, England. At the age of 14 he went to the States with his parents, and assisted his father, who became superintendent of Forest Hill Cemetery, Utica, N.Y.

LAWRENCE COTTER.—Mr. Lawrence Cotter, manager of the Lakeview Rose Gardens, Jamestown, N.Y., died on Saturday, March 23, after a long and painful illness. He was a native of County Cork, Ireland, and emigrated to America when a young man, since which time he has been active and prominent in commercial horticulture in America.

MAURICE DE VILMORIN. As these pages are being passed for press, news reaches us of the death of Monsieur Maurice de Vilmorin, one of the partners of Messrs. Vilmorin, Andrieux et Cie., nurserymen, Paris. He died at the end of last month, at the age of 69, and was buried in Paris on the 29th ult.

ANSWERS TO CORRESPONDENTS.

APPLE BUDS INJURED: *G. F. M.* The flower-buds have been attacked by grubs, and the birds were probably seeking them. Spray the trees with arsenate of lead either before or after the blossoms open. The specific will kill the grubs and render the buds distasteful to the tits which you consider may have caused the damage.

APPLE DISCOLOURED: *Pomona.* There is no fungus or organism of any kind on the Apple which would account for the markings, which must have been caused by some external agency, such as hail.

BEANS DISEASED: *M. M.* The Beans are infected with the fungus known as Uromyces Fabae, or Bean rust. Spraying with dilute Bordeaux mixture arrests the spread of the disease, but cannot be said to constitute a cure, which has yet to be discovered. Burn all the infected plants as soon as the Beans are harvested.

BULBS DISEASED: *A. O. W.* Both plants are attacked by the fungus Botrytis. This fungus is usually a saprophyte, but when plants are subjected to unfavourable conditions (of weather, etc.) it becomes parasitic. Remove all diseased parts of the plants and apply flowers of sulphur.

FUNGUS ON LAWN: *F. O. L.* The fungus is apparently a species of Peziza or allied genus. It would not be advisable to eat it before having its identity determined more exactly.

GRUBS ATTACKING PEAS AND CABBAGES: *M. L.* The Peas are attacked by Blanjulus guttulatus—the small snake millipede. The insects are not likely to do more harm if the plants are stimulated by a fertiliser and a dressing of equal parts fine lime and old soot is hoed in each side of the rows. The millipedes from the land on which the Cabbages are planted are Julus londinensis; they are not harmful.

NAMES OF PLANTS: *H. H. T.* We do not undertake to name varieties of Pelargoniums or other florists' flowers. Send them to a nurseryman who specialises in Pelargoniums. *J. B. M.* Skimmia japonica (male plant).

NECTARINE AND PEACH LEAVES: *Leaves.* See reply to *Puzzled* and *H. P.*

PINE DISEASED: *W. A.* The fungus on the Pinus is the "rust" (Coleosporium Senecionis). It is also found on species of Senecio (S. vulgaris, or Groundsel, and S. Jacobaea, Ragwort). Such weeds should not be allowed to grow in or near the nursery.

ROSE CANKERED: *J. H.* The Roses may have been injured by the fungus Coniothyrium, but only a barren stroma of the fungus was present; it is therefore not possible to determine the exact identity. Cut out and burn the cankered parts of the branches.

VEGETABLES AS PAID WORK: *Learner.* As you contracted to supply "House, coal, and vegetables," without mentioning that your offer only applied to vegetables grown on the estate, we consider that you are bound to supply them, even if it involves buying them for that purpose. If you could prove that there exists a general custom to the effect that gardeners were entitled, as perquisites, to a reasonable quantity of vegetables grown on the estate, you might possibly have contended that your offer had only reference to this custom; but even then the burden of proof would have been upon you.

VINE LEAVES INJURED: *Puzzled* and *H. P.* The leaves are not infected with any specific disease; their injury has followed improper conditions of cultivation. As a rule, such a condition is produced by imperfect ventilation of the vinery. Early in the day there is generally an excess of moisture in the atmosphere, and when this condenses on the leaves bursts of bright sunshine are apt to cause "scalding" of the foliage.

Communications Received A. M.—Mrs. M. W.—E. L. H.—W. S.—S. & S.—J. H.—Mrs. F.—C. R.—R. A. M.—G. F.—B. & S.

THE
Gardeners' Chronicle
No. 1637.—SATURDAY, MAY 11, 1918.

CONTENTS.

ILLUSTRATIONS.

THE MARKET FRUIT GARDEN.

APRIL for the most part was a cold and cheerless month. The wind was from the north, north-east, or north-west on most days, and on rare half it was very strong. Only three times, however, was frost registered on the screen at my place, and then it did not exceed 2° in the upper parts of my orchards or at the lowest level. In some parts of the country, including some important fruit districts, 8° were reported as having been registered on the 13th or 19th, doing some harm to Plum blossom. Rain fell at my station on 16 days or nights, amounting to 2·53 inches. The progress of vegetation was extremely slow during the month, in consequence of the general lowness of the temperature, the nights having been very cold, even after the few sunny days.

Fruit Prospects.

Apart from damage by frost, which is reported to have affected Gooseberries as well as Plums, we can only judge as to probable fruit crops by the extent of blossoming. This is generally fair with respect to Plums, Gooseberries, Currants, and Cherries, which it seems likely to be so with Strawberries. In my orchards the only variety of Plum which has not made a fair to full show of blossom is Belle de Louvain. This variety is now in the seventh season from the planting, and it has not yet shown any blossom worth notice, less than a score of the trees having had any at all. Such shyness in fruiting is greatly to the disadvantage of the variety, which it was hoped might be to a great extent a substitute for Victoria, now that the latter has become so seriously liable to silver-leaf attack. But although frost in my district was not severe enough to do any material damage to Plum blossom, the very cold and often virulent winds of April were not conducive to its free setting. It was only occasionally that bees and other insects were at their useful work of pollinating. Reports as to Pear blossoming are almost uniformly unfavourable, although the comparatively small number of trees grown by me have enough bloom on the whole for a full crop. The outlook for Apples is a chequered one; some varieties are fully furnished with trusses of blossom buds, only a few of which are open at the time of writing, while others are almost entirely bare. A surprising proportion of fruit buds, on opening, were found to be only clusters of leaves. They were fruit buds, but not sufficiently developed to blossom this season. Even where there is a great show of blossom, however, there is grave reason to fear disappointing results, unless timely spraying has averted a danger to be noticed below.

Another Caterpillar Season.

When my notes for March were written caterpillars had only begun to hatch to a small extent. Early in April, however, they became numerous on nearly all varieties of Apples, and the attack developed into one as bad as that of last season. But there is this important difference in the circumstances of the two seasons in relation to this pest. In 1917 I was not prepared for so destructive an attack of caterpillars, never having seriously approach to it before. This year I was on the watch for it, spending most of my time examining trusses of blossom-buds with a lens, and promptly beginning my counter-attack as soon as required. All varieties infested to any considerable extent were sprayed with soft soap and either arsenate of lead or nicotine at 90-40 degrees of purity, the quantities used with 100 gallons of water being 10 lb. of soap, 4 lb. of arsenate of lead, and 2 lb. of nicotine. As nicotine costs 14s. 6d. per lb. its use is extremely expensive, consequently, it was used to a much smaller extent than arsenate of lead. Soft soap was used with nicotine because of its penetrative capacity, while it was used with arsenate of lead as a contact spray fluid to kill aphides, suckers, and small caterpillars. Aphis was not found to any considerable extent on any variety except Apples other than Worcester Pearmain and Allington Pippin, but suckers were numerous on several varieties [illegible] Apples and Pears. The spray [illegible] was done early. Previously I have waited [illegible] the blossom-buds to open separately, but this season I gave them [illegible] caterpillars and other pests before they had time to do much damage. To some extent the work was done too soon, while the trusses of buds were so compact that the spray could not get into them properly, so that the trees had to be sprayed a second time. The results were fairly successful, but there are to be noted [illegible] subsequent examination having shown that all but very small proportion of the caterpillars had been killed.

In the last week of April a bad infestation of caterpillars on Plums and particularly on espalier trees was discovered, with slight attacks of the aphis in places. These are to be dealt with after all the blossom had fallen, which is not the case at the time of writing.

A General Caterpillar Campaign Needed.

What is wanted is a general effort among fruit growers this season to destroy caterpillars, not only for the purpose of saving serious loss in this year's fruit crops, but also and even more emphatically, with the object of preventing the production of myriads of the pests in the next and later seasons. In districts where fruit farms are numerous and adjacent, the latter object is certain to be attained by the action of a minority of fruit growers, as the moths which produce the caterpillars are strong flyers, and clean orchards are infested from foul ones. It is particularly unfortunate that bloom for spraying should be short, and that spray stuffs should be inordinately expensive. But there is no other work at this time which should not be set aside, if necessary, for the sake of spraying, and no outlay that can be expected to prove more remunerative than that which is necessary for fighting against the destroyers of fruit and foliage and the prospective progenitors of similar malefactors for action in future seasons.

How to Destroy Apple Suckers.

For the first time my spraying operations have been fully successful in the destruction of Apple suckers, the reason being that the insects were attacked when they were quite small, and before they had become old enough to protect themselves with globules of mucus and the filaments which they also excrete. This is not to say that they have been exhaustively destroyed. But in many cases forty to fifty trusses of blossom buds on varieties that had been badly infested have been recently examined by myself and another observer without finding a live sucker, hosts of dead ones being found by the use of a lens. This was where the trees were drenched in spraying until they dripped all over. It has been a difficulty to induce my sprayers to spray profusely enough, and where they were left too much to themselves a second spraying in some cases was found necessary. Most writers on spraying urge that when either nicotine or arsenate of lead is used the spraying should be a slight and misty one. Where this plan was adopted, though too much hurrying over the work, a second spraying was found necessary; but where the trees were drenched, one operation was strikingly successful. It is expensive to drench trees with costly spray fluids, no doubt, but a doubled expense pays well when it secures success, instead of partial failure. Even the poison needs to be forced among the buds partially separated blossom buds in the trusses, in order to poison the caterpillars before they have spoilt all or many of the buds, while it is obvious that the soft soap or nicotine cannot otherwise destroy suckers or aphides.

Nicotine versus Arsenate of Lead.

With respect to the comparative advantages of these two spray-stuffs, it is desirable to make further observations before coming to a decided conclusion. At present I am disposed to prefer nicotine, with soft soap, for early spraying, and arsenate of lead, also with soft soap, for later work. There is no doubt that nicotine adds greatly to the strength of soft soap as a contact wash for killing suckers, aphides, and small caterpillars; but, as a poison for biting pests it is less effective than arsenate of lead, and less lasting in potency. Therefore the latter is much more likely than the former to destroy caterpillars hatched after a spraying, as well as those which have escaped from the blossom trusses to the foliage. After the present date the preference, it seems to me, should be given decidedly to arsenate of lead.

Disappearance of Thrips.

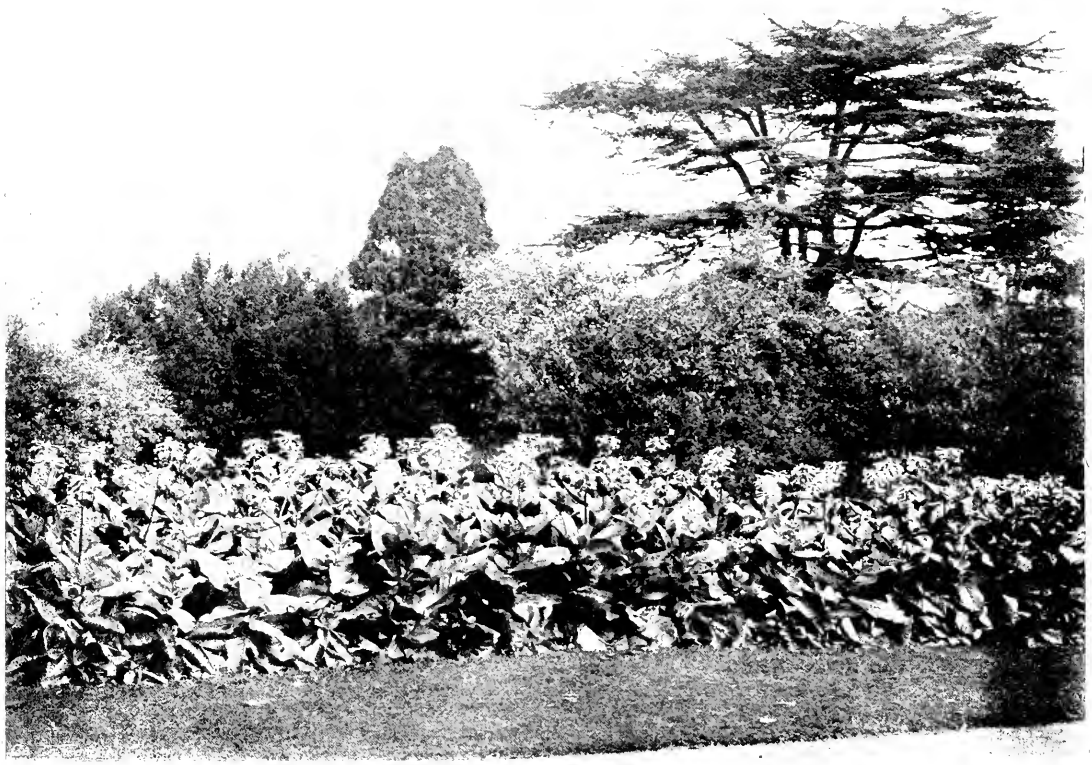
In previous years it has been noticed most dentally that thrips have almost entirely disappeared from the trusses of Apple blossom buds shortly after a spraying. This season the subject has had more definite attention in connection with the worst infestation of the insect that I have ever seen. Over 200 trees of James Grieve variety at the beginning of April were so densely attacked by thrips that hardly a truss was free from them, and four to six in a truss were frequently counted. The trees were sprayed with soft soap and arsenate of lead on April 5, and a few days later it was found that some thrips were dead in the trusses, while many more were missing. On April 15 only 19 were found alive in 40 trusses, and on the 25th only two in 60 trusses. If any entomologist who may read these notes can account for this wholesale disappearance the explanation would be interesting. Mr. Theobald states that the insects of the first brood normally drop to the ground not long after they have reached maturity, and that some which he had under observation had all dropped by May 10. But on April 25 the pests, or at least many of them, were not mature, and the majority of them had disappeared fully a fortnight before that date. My suggestion is that, when hit by the spray, many of the insects drop to the ground, and that, later, others that have been wetted and weakened rather than killed, drop or are blown from the trees. Otherwise it is possible that the embryo fruit and foliage are rendered distasteful to them by the spray fluid, and that they drop to the ground prematurely to pupate and to produce a second brood of egg-laying insects by about the middle of June. *Southern Grower.*

PLANT NOTES.

NICOTIANA SYLVESTRIS.

The two tobacco-yielding species of Nicotiana are N. Tabacum and N. rustica, both South American plants, now largely cultivated in the warmer countries of the world, and in some of them established as wild plants. According to De Candolle, all the fifty or so species that have been described by botanists are American except N. suaveolens, of Australia, and N. fragrans, of the Isle of Pines, south of New Caledonia. The same authority states that certain narcotic plants were smoked in the Old World from a very early epoch, and that tobacco was only substituted after the discovery of America. Although the leaves of only two species of Nicotiana are used for the making of tobacco, there does not appear to be any good reason why other species should not possess the same property, except, perhaps, that the two named are easy to cultivate, and smokers are quite satisfied with the qualities of the best samples of the "weed" obtained from them.

N. suaveolens and N. fragrans have attained considerable repute as garden plants on account of the delicious fragrance of their large, long-tubed flowers. The red-flowered N. Forgetiana, introduced from S. Brazil by Messrs. Sander and Sons eighteen years ago, was crossed by them with other species, and the beautiful hybrid tobaccos distributed under the name of N. Sanderae were the result. So far as I know Messrs. Sander did not use N. sylvestris in their crossings, but in my opinion it is a better plant for the purpose than any other of the Nicotianas. It is a tall, stout, branching, leafy annual 5 or 6 feet high, with lyrate, dark green leaves a foot or more long, and large nodding cymes of white, long-tubed flowers. The plant first flowered at Kew in August, 1898, the seeds having been obtained from Messrs. Dammann and Co., Naples, who procured it from the mountains of Bolivia at an elevation of about 5,000 feet. For years a bed of it was annually a striking feature at Kew, as shown in the photograph reproduced in fig. 84, which was taken in November when the plants were in perfect health and in full flower. Seeds were sown under glass in spring, and the young plants were put in the bed in early summer. They produce seeds in abundance. The plant is an annual, as nearly all the Nicotianas are. Another large-leaved species is N. tomentosa (colloseal, from Peru, which in a greenhouse at Kew reached a height of 10 feet and had leaves a yard long and 18 inches wide; the flowers were in large terminal panicles and were bell-shaped, yellowish, flushed with rose. This species has also been used effectively as a sub-tropical bedding plant at Kew. W. W.



Photograph by E. J. Wallis.

Fig. 84.—NICOTIANA SYLVESTRIS FLOWERING AT KEW IN NOVEMBER.

ORCHID NOTES AND GLEANINGS.

LAELIO-CATTLEYAS AT THE DELL, ENGLEFIELD GREEN.

In Baron Schroder's famous gardens there is a remarkably fine display of Laelio-Cattleyas. The large, span-roofed house, in three divisions, contains over 3000 blooms. The greatest number of flowers are borne by fine specimens of L.-C. Fascinator (C. Schroderae × L. purpurata), which bears fine spikes, on each of which are from three to six flowers, varying in tint from blush-white with rosy-mauve, veined lip, to bright rose with ruby-red labellum. The Dell strain of L.-C. Aphrodite (C. Mendelii × L. purpurata) is exceptionally fine. Among yellow-petalled varieties L.-C. Anaconda, golden-yellow with claret-coloured lip, is specially attractive. In the general collection there is a fine specimen of Cattleya Skinneri alba, bearing many flowers; a batch of the white C. Astor, and other white Cattleyas; a handsome batch of Brasso-Cattleyas and Sophro-Cattleyas, including some very promising new forms; and a selection of the best Miltonias, including the unique M. The Baron and M. Vexillaria Memoria G. D. Owen. This latter was one of the original specimens of the old collection.

ORCHIDS FROM WARNHAM COURT.

C. J. Lucas, Esq., sends flowers from plants flowering in his collection at Warnham Court, Horsham.

Odontoglossum Crispo-Othello (raised between O. crispum and O. Othello (Adrianae × Harryanum) is a pretty and distinct flower, and throws an interesting light on the possibilities of development by the hybridiser. The outstanding features in the flower are the thick substance imparted by O. Harryanum, and the unexpected development of the lip, which is broad, flat, and nearly circular in outline. It is attributable to O. Adrianae, which has much undulation of the margin of the lip. The wavy edge has been ex-

panded, and membrane provided for its extension in a flat surface, the margin only having a very thin, wavy band, which is fimbriated. The flower is of good shape, cream-white, with purple spots of varying sizes.

ODONTOGLOSSUM DIRCIMIUM (Dirce × eximium Warnham Court variety) has bright red-dish-claret coloured sepals and petals, the tips and slight margin in the outer halves being white, tinged with rose.

O. ZENA (Harryanum × sceptrum) is a great improvement on O. sceptrum, and has a large, sulphur yellow, fringed lip.

O. ANDERSONIANUM STUNNER forms a link with the old-time imported natural hybrids, and is one of the best varieties.

LAELIO-CATTLEYA GEORGE BRANCH (Schilleyensis × G. S. Ball) and two very dissimilar flowers of L.-C. Lawrie (C. Lawrenceana × L.-C. warnhamensis) are included. Both these flowers show C. Lawrenceana plainly in the lip, the colour of one being ruby red and the other purplish mauve with orange-coloured disc.

habit. Such dimorphism is, if I remember aright, described by Darwin in his *Forms of Flowers* as occurring not infrequently in thrum and pin-eyed species. On my hypothesis—if a guess may be dignified by so large a term—the pure pin and the hybrid between pin and thrum have of necessity the large habit, and only in the pure thrum may the compactness and floriferousness find expression. If this is so then it is desirable not to let the two forms have intercourse with one another, for if they grow side by side any chance seedlings are almost or quite sure to be hybrids, and to have the less pleasing habit.

The pigs are now established, and in the absence of birds who seem, except a robin which comes and perches almost on my spade to collect the wire-worms to have deserted my nesting-boxes, make a pleasant porky music near the house. I have been testing their taste in weeds and so far find that Chickweed is the favourite. Next they take to oil, yeasty when it is in blossom, and after that a patty, smooth my light-turned

deuer and myself. As he remarked but yesterday, "to see this place now anyone would say that we *mother* of us knew anything about gardening"; truly a subtle way of setting a novice in his place. *A. N.*

THE ALPINE GARDEN.

SEDUM COERULEUM

THE Blue Stonecrop, Sedum coeruleum, is of very suitable stature for the Alpine garden, generally about 6 inches or less, while the pale blue flowers do not clash, but rather harmonise, with other rock plants. It may be employed profitably to give a display of blooms after the bulk of the perennials have gone to rest. Sow the seed very thinly where the plants are required to bloom, in a sunny position in light soil, from the middle of April until the end of May. Thin the seedlings to about 3 inches apart.

CONFESSIONS OF A NOVICE.

INEXTRICABLE links associates the early year note of the cuckoo with spring, were it not so my garden in its present immobility would deny that the life of the earth is again renewing itself. It is true that the land is green again, and that the pink and white blossom of the Apricot is breaking; but, despite those inevitable movements of life, these things that stir in spite of untowardness of the weather, the garden as a whole is doing its best to "stand still." The Birches have recorded their protest against the nipping winds by the jaundiced sodden of their young complexions. Anemone Pulsatilla, or mayflower, I know not which has produced none but the miffiest of flowers, and flowers of the Magnolias, of which last year I wrote with pride, have become lax brown flatterns instead of white emblems of the year's dawn. Only the Saxifragas seem indifferent to the east wind, and flower as though it reminded them of the cool breath of the snows. Old men tell me that we must search the records for nearly forty years before we find a parallel with this year's unkindly coming in of summer.

The general scarcity of Pear blossom has been referred to by Mr. Beckett and other of your correspondents. Here in this garden is a pretty illustration of the fact that this scarcity is to be regarded as the inevitable aftermath of two years' plenty. On all save two trees the blossom was of the slightest, but two Doyenne du Comice bloomed profusely. They were young cordons, bought and planted rather late last year, when they bore no flowers. Wherefore I infer that the popular explanation is the correct one, and that profuseness of blossoming and fruiting bring barrenness in their train.

Like an oasis in a desert of dreary days Saturday of last week stands out, and, as good fortune willed it, I happened on that day to make a spring pilgrimage to Wisley. There, as always, I found much to admire and something to puzzle about. This time the puzzle was Primula Juliae. There, on the rock garden, this charming plant is flourishing, and in two forms. The one plant is small, both as to leaf and flower, of compact habit, and admirable as a garden subject. The other is of larger and laxer habit, much less of a cushion plant, with individual flowers undoubtedly superior to those of the former, but so few in numbers as to make a relatively poor showing. A study of the specimens indicates that whereas the small, compact form is thrum-eyed, the larger form may be pin or thrum. I think that the explanation is to be found in the direction of what the botanists call dimorphism; that the thrum habit goes with floriferousness and compactness, and the pin habit with sparseness of flowers and laxity of

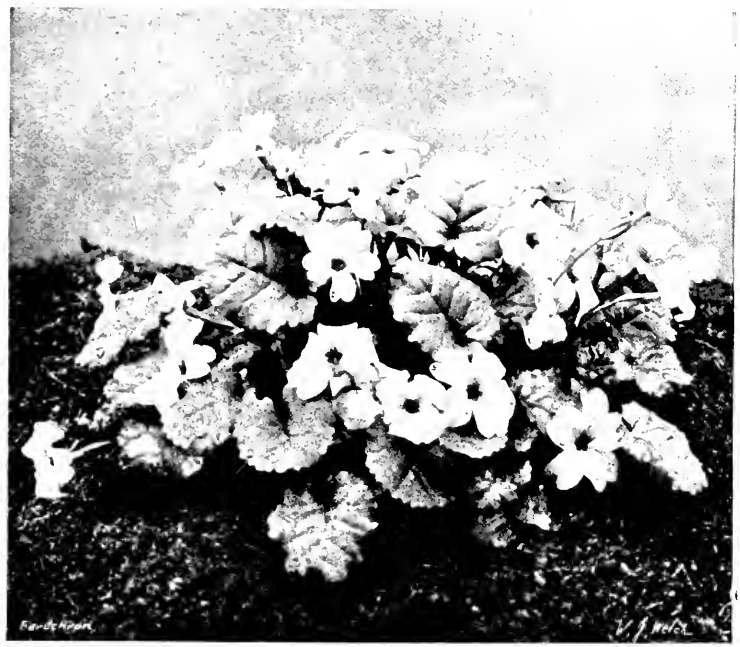


FIG. 85.—PRIMULA JULIAE: FLOWERS ROSY PURPLE.

borders enough Sorrel grows to feed a herd of asses. I do not recall that any of the books that discourse of weeds have pronounced praises on the subtleness of Sorrel in its habit of growth. Yet the weed deserves praise, such as one gives reluctantly to successful enemies. Not only does it grow indefinitely, budding at short intervals—pushing out laterally or plunging vertically downward, but, and this is its chief anchor, which makes dislodgment so difficult, each runner grows for a foot or so and then bifurcates. The two branches turn their backs on one another, and go off in opposite directions, with the result that when the main branch is torn out only one of the laterals comes away with it, the other remaining to cumber the ground and teach patience to the gardener. But in any case weeds in a garden now are an honourable sign, and I feel no jealousy but only pity for those of my neighbours whose borders are spick and span; yet I will confess here that the weed-grown gravel paths, though they feed my patriotic pride, are a source of real sorrow to my gar-

PRIMULA JULIAE.

THERE are some flower-lovers who do not care for the colour of Primula Juliae (see fig. 85), and consider it hard and unsatisfying, yet, grown in suitable surroundings, such as in the chips of the wet moraine or in short grass, the plant is quite attractive.

It is one of the dwarfer hardy Primulas classed with our common Primrose, but very distinct. The small rounded leaves make a low carpet on which nestle a wealth of little red flowers. The red is undoubtedly a trifle hard, but, all the same, the flower is a precious one. It is well to mention, however that there are forms of P. Juliae which are not so floriferous as others, and that it is desirable in purchasing to stipulate that the free-flowering variety should be supplied. Although a moisture-lover, and delighting in damp places, I have found it grow and flower highly satisfactorily in a dry moraine. The species is a native of the Caucasus. *W. Arnott.*

NOTICES OF BOOKS.

FUNGOID AND INSECT PESTS AND THEIR CONTROL.*

THIS pamphlet, published by the author, should be in the hands of all gardeners who desire to know something of the common garden pests. The plan of the pamphlet is to describe by coloured illustrations the chief phases in the life history of each of a number of common pests, to attach to the illustrations a brief account of the pest, of the injury which it does to the plant, and of the method of control.

Although it cannot be said that the illustrations are always well done—that of club-root, for example, we ourselves, though only too familiar with the symptoms of the disease, find a difficulty in recognising—yet their boldness and distinctness make them in general valuable as means of identification. Among the pests and diseases illustrated and described are Bean aphis, club-root, Cabbage white butterfly, Cabbage moth, Cabbage-root fly, Cabbage-gall weevil (which should be placed next to the page devoted to club-root, for the symptomatic swellings on the root caused by the weevil are often mistaken by the uninitiated for the more irregular lumps caused by the club-root parasite), Carrot fly, Celery spot and "blight," Celery fly, Onion mildew, Onion fly, powdery mildew of Peas and Pea spot (the allied disease of Haricot Beans might also be mentioned), Potato blight, brown scab, black wart, and corky scab.

The methods of control are in most cases well chosen, but we note the tendency common in those who approach the subject from the pathological point of view to prescribe a remedy at all costs. For example, we ourselves should never waste time or money in spraying Peas affected with powdery mildew with Bordeaux mixture. This disease is general in late summer among Peas grown on light soil, and may be regarded as an indication that the soil is unsuited for the purpose of growing late Peas. We prefer, therefore, to cut our losses and either refrain from growing late Peas at all, or choose a variety which is fairly resistant to mildew and let the disease do its worst.

In the account of the Cabbage-root fly the early symptoms—flagging of the plants in sunshine and a general yellowing of the foliage—should be mentioned, for plants which are thus affected should be pulled up at once, the maggots in the roots destroyed, and the space the plants occupied used for some crop other than Brassicas.

Other comments of a similar nature might be made, all tending to show that this booklet leaves room for improvement, but, when all is said, the fact remains that it is in the main an excellent piece of work and one which deserves to be generally known among and consulted by gardeners. We hope, for the sake of small cultivators generally, that Mr. Mosley will regard this pamphlet as a first edition, that he will continue his observations on these pests, and as his experience is enlarged will give the public the benefit of it in a new edition. There is also a great body of scattered information—much of real value—which is to be gleaned from the literature relating to horticulture and to garden pests, and it would be a really useful work if the author would survey this, test his information by actual experiments and give the public the benefit of the results. As an example, it is stated somewhere in the French periodicals that copper-sulphate is peculiarly fatal to slugs: if this be true, and a device for applying it could be discovered, many a gardener would rise up and call the discoverers blessed. The booklet concludes with illustrated accounts of the general feeders—wire-worm, snails, slugs, millipedes and centipedes. Under the heading of wire-worms attention should be drawn to the beneficial effect of a dressing of sulphate of ammonia in enabling the crop—for example, Potatos—to "grow away" from the pest, and also, in the case of Tomatos, to the successful practice of shallow planting so as to leave the ball of the root and not the stem at the mercy of the pest. Again, it would be interesting to know the evidence on which it is stated that Mustard is a good crop to take on ground infested with wire-worm. We ourselves have tried it, but not under critical conditions. Mention should also be made of the value of naphthalene and of the proprietary specifics which in certain conditions give good results.

Finally, we suggest that the plant pathologists interested in horticultural crops should arrange between them a programme whereby each undertakes to study thoroughly and continuously one or more of the chief pests and to go on doing so until he is satisfied that he has the pests really under control. Five years expended thus would do more for horticulture than a generation of exhortation and incompletely authoritative advice addressed by pathologists to practical gardeners.

* *Fungoid and Insect Pests and their Control.* By F. O. Mosley. Part I.—Vegetable and Pulse Crops. Published by the author, "Whernside," Basingstoke Road, Reading. 1s net.

The Week's Work.

THE KITCHEN GARDEN.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

BRUSSELS SPROUTS.—The earliest plants of Brussels Sprouts are ready for transplanting in their permanent quarters. Allow a distance of 2½ feet between the plants and the same space between the rows. Lift the roots carefully with a trowel with a good ball of earth attached to prevent a check to growth. Although Brussels Sprouts will grow on almost any kind of soil, only ground that has been thoroughly prepared during the winter will give good results. Transplant seedlings of later-sown plants at 4 inches apart in a sheltered position. Syringe and shade the seedlings if necessary for a few days, and do not allow the roots to suffer for want of water.

LEEKS. Leeks raised from seed sown as advised on p. 34 to produce large specimens should be ready for planting in narrow trenches prepared as for Celery. Fork in a liberal quantity of rotten manure in the bottom of the trench, and cover with the finest soil to the depth of 4 to 6 inches. Plant carefully with a garden trowel, allowing a space of 1 foot apart for single rows. Give the roots liberal supplies of liquid manure throughout the growing season. To economise labour and ground Leeks large enough for all ordinary purposes may be obtained by sowing seed out-of-doors in March and planting the seedlings in deeply-dug ground at a space of 1 foot and 15 to 18 inches between the rows. Make a deep hole with a dibber and drop the plants in the hole, just covering the roots with fine soil.

BROAD BEANS.—Sow one or two more rows of Broad Beans of a maincrop variety in double lines 2½ feet apart for autumn supplies. A row of Spinach may be intercropped between the Beans, and the Spinach will be used before the Beans need the space.

POTATOS.—Finish the planting of maincrop Potatos at the earliest opportunity. Encourage the development of plants which are well through the ground by frequently stirring the soil. Ventilate Potatos in pits and frames freely, removing the lights altogether on mild and rainy days, and keep them well supplied with water.

GENERAL REMARKS.—Many seedlings raised on gentle hot-beds and in cold frames require transplanting in a sheltered position 3 or 4 inches apart. Examine seed-beds carefully and make fresh sowings where there are failures. Make small sowings weekly of Mustard and Cress in slightly shaded positions. Also make regular sowings of Radishes; sow and prick out Lettuce regularly, utilising frames that have been cleared of other subjects, so that supplies may always be available. Make a sowing of Endive now, and further small sowings about once a fortnight for autumn and winter supplies. Thin seedling Turnips, Onions, Carrots, and similar crops at an early stage. Run the Dutch hoe between the rows as soon as the plants are well through the ground to prevent the growth of weeds, and keep the soil in a friable condition.

THE ORCHID HOUSES.

By J. COLLIER, Gardener to Sir JEREMIAH COLMAN, Bart., Gatton Park, Reigate.

ODONTOGLOSSUM.—Plants of Odontoglossum Insleayi and its variety Leopardinum are starting to grow afresh, and should be repotted or top-dressed as is found necessary. Those that have sufficient pot-room for another year, and with compost in good condition, should be immersed in water in order to soak the soil thoroughly, afterwards allowing it to become partially dry, when portions of the old materials should be picked from between the roots on the surface of the pots, and replaced by fresh compost. Others that need repotting should be afforded sufficient rooting space to accommodate them for two seasons. Ordinary flower-pots form the most suitable receptacles. O. Uro-Skinneri is also developing new roots from the base of the young shoots, and should be treated in a similar manner. O. Rossii majus and its many hybrids will, as they pass out of flower, require repotting or top-dressing. These plants are best grown in plain, shallow Orchid pans suspended from the roof-rafters. When dealing with specimens with numerous back leafless pseudo-bulbs, and growths that have grown over the sides of the pans, the plants should be broken up, and the back pseudo-bulbs cut away, leaving only three or four behind each lead, making them up again into specimens of the required size. All the Odontoglossums mentioned will succeed well in the warmest position in the cool Odontoglossum house.

SHADING.—Lattice blinds alone will not afford sufficient protection for many occupants of the Orchid houses. At this time of year we may reasonably expect bright sunshine, and it will be necessary to have the roof-glass of nearly all the houses stippled outside. Exceptions are the Mexican and the Dendrobium houses. A mixture of whiting and paraffin will answer the purpose, with the addition of a little clear varnish to cause it to adhere to the glass. Before stippling the glass should be thoroughly washed and allowed to become quite dry. The stippling should be applied as thinly as possible on the houses containing Cattleyas and Laelias, but should be put on more thickly over the divisions containing Odontoglossums, Phalaenopsis, Miltonias, Vandas, Aërides and Saccolabiums. The stippling should be done whilst the sun is shining full on the glass, so that the mixture may dry as quickly as possible.

THE FLOWER GARDEN.

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

DISBUDDING ROSES.—Both standard and dwarf Roses produce certain buds of poor quality, which, if left to grow, are of no value to the plant, and are probably distinctly prejudicial. These are easy to distinguish, and should be rubbed off. Those that are left make stronger growth, and superior foliage and finer blooms are the result. It will be of advantage to most Roses to be surface-dressed with a slow-acting manure, and then to have the surface soil deeply hoed or forked over. See that strong young shoots of climbing varieties are securely fastened.

PROPAGATING SHRUBS.—A number of shrubs may be propagated from cuttings made from soft, young shoots of the current year, and rooted in a heated propagating pit. The best stage is just before they begin to harden, for if too soft they damp off, and if too hard they fail to develop roots. The cuttings should be

not more than 5 inches long, and the usual heel need not be made. I strike them in pure sand kept constantly very moist, and a heavy shade is of value, for if the cuttings are allowed to flag there is slight hope of success, and the shoots from the time they are severed from the parent plant must be kept damp.

Box Edgings and Grass Verges.—The present is the usual time for trimming Box edgings, great consumers of labour in flower gardening, but I have never found it convenient to cut them in this month, some being clipped earlier, others later—so late as September, and those to whom labour presents a difficulty may well leave theirs to the same month. The edgings remain trim and neat for nearly twelve months when cut in that month, and rough parts may be quickly reduced during summer without touching the other parts. Grass verges should be regularly trimmed before the grass makes much perceptible progress. The saving in labour is considerable, apart altogether from the enhancement of pleasure to those who constitutionally dislike untidiness. And so with parts which cannot be reached by mechanical mowing. There is nothing gained by allowing unrestricted growth, and the beauty of specimen shrubs is greatly spoiled by a fuss or more wide band of coarse grass encircling their bases. All this kind of labour may be overtaken after rain, when general garden work cannot be done with profit.

Frost-bitten Shrubs.—The effect of the severe frost in January is now sadly apparent, and Fuchsias, Banksian Roses, Bentbamias, and many other plants will require to have the dead material excised. Where the injury has been very severe the plant should be cut down. Shoots springing from parts which are badly frosted will die back before summer is far advanced. It is better to look closely over the plant and do the necessary pruning now, after which strong shoots will soon appear and take the place of those removed.

Summer Bedding.—A commencement may be made with setting out the less hardy plants, and more particularly if the parts to be filled are sheltered. It was a not unusual custom at one time to delay planting till June, with the result that the plants were half starved through long keeping in pots and boxes, and that many days might be occupied a few weeks later in filling up blanks. The planting of material now that is capable of enduring a slight frost has the further advantage of lessening the strain on labour later, for it is less exacting to plant sectionally and choose one's time for planting than it is to delay till the last moment, and have to take so many days that other work is neglected. The plants that may be put in now are Antirrhinums, Scapdragons, Verbena venosa, Alyssum (Koniga), Phalaris arundinacea variegata (Gardeners' Garters), Gazanias, Silvia patens, Asters, and half hardy plants in general. If possible, choose afternoons for this work and dull weather rather than sunny, the right properly treated, with a good soaking and subsequent hoeing, all should succeed well even in hot weather. Badly rooted plants should be rejected; when used they remain, if they live, a continual eyesore.

THE HARDY FRUIT GARDEN.

By Jas. Hudson, Head Gardener at Gunnersbury House, Acton, W.

Apricots and Caterpillars.—The caterpillar of the Apricot moth is causing some trouble to our trees, but not to a serious extent at present. If the pest seems likely to spread the trees will be sprayed with weak Quassia extract, but I do not like to apply an insecticide of average strength to Apricot trees, and I would be especially loath to do so this spring, as there is a very fair crop of fruit at the swelling stage. Syringing with clear water will be resorted to in the hope of keeping the pest in check. I have been troubled with this same insect in mid-season vineries, the creatures fixing two or more berries together by their web and often eating the skin of the berries, causing them to decay. They cause the same trouble to Apricots. This insect is very active, and drops quickly to the ground.

Black Aphis and Cherries.—The Cherry aphis increases very rapidly, and the dry, easterly winds are favourable to the spread of the pests. The insects may not appear on the trees for a week or two, but a watch should be kept and measures taken at once to check them. It is a good plan to pinch all forelight shoots as soon as the pest appears, for it thrives on these leader shoots more than on any other part of the tree. If the insect is troublesome on other branches they may need dipping in a nicotine solution. The Cherry aphis should never be neglected in the early stages, for it soon disfigures the foliage and also makes the fruits glutinous and sticky; moreover, it is more difficult to destroy when the foliage has developed.

Standard Cherries.—Trees of May Duke and the Kentish varieties of sweet Cherries are covered with a profusion of flowers. For want of opportunity our trees have not been pruned for the past two seasons, hence, no doubt, their profusion of flowers, the trees being still on the young side. Besides flowering so freely, the trees are in the best of health and growing vigorously, for this healthy condition is not due to the use of organic manures; indeed, autumn-fruiting Raspberries are planted under them, so that the soil is not over rich.

PLANTS UNDER GLASS.

By E. Harriss, Gardener to Lady Wantage, Lockinge Park, Berkshire.

Richardias (Arum Lilies).—There are two methods of treating the young Richardias after flowering. One is to place the plants out of doors in a sheltered position and gradually reduce the supply of water until the foliage has died down. They are then turned on their sides for a period of rest, and potted afresh in August. The other method is to plant them out in well-prepared ground, where they are left until there is danger of frost in the autumn. Either of these methods may be adopted with success; the latter probably involves the least labour and in these days of labour shortage this is a consideration.

Humea elegans.—Plants of Humea elegans which were raised from seed sown last year should not be hastened into flower by the use of fire heat. Undue forcing of the plants is the cause of many failures. Let them grow slowly in a cool house and shade them from bright sunshine. Admit plenty of air to the house in favourable weather, leaving the top ventilators open all through the night, more or less, according to the weather. The pots are filled with roots, and stimulants may be used, but not to excess. Seeds may be sown now in shallow pans filled with a light compost for raising another batch of plants to flower next year. Well water the soil previous to sowing and lightly cover the seed with very fine soil. Place the seed pans in a fairly warm house and cover them with sheets of glass, which in turn should be covered with brown paper till the seedlings are through the soil.

Coleus.—To obtain large specimens of good colour grow Coleus in a warm, moist house. Repot the plants when they need more root room, using a fairly substantial compost—a mixture of rich, fibrous loam, leaf-mould, manure from a spent Mushroom bed, wood-ash and sharp sand is suitable. Ventilate the house carefully during the forenoon and maintain a moist atmosphere by damping the bare surfaces in the house frequently. Gradually reduce the amount of ventilation as the sun's power declines in the afternoon, but expose the plants fully to the sunshine at all times.

FRUITS UNDER GLASS.

By W. J. Geise, Gardener to Mrs. Dempster, Keele Hall, Newcastle, Staffordshire.

Melons in Frames.—The present month is a favourable time to start the growing of Melons in frames. Successional crops may be had through the season as more frames become available. The greatest care should be given to the making of the bed and seeing that the fermenting materials are properly prepared. Some growers use stable manure only, but a hot-bed made of Oak leaves and manure in equal proportions retains the heat for a much longer period than manure alone. Well mix the materials under an open shed, allow them to ferment for a few days, and when ready make the bed in the frames. Cover the surface with old turves when the warmth from the bed is suitable, and employ similar soil mixed with old lime rubble as compost for planting. Place the soil in a small mound in the centre of the frame. Plant firmly, but not deeply, and apply light top-dressings of the compost when the roots grow through the surface. Spray the plants twice daily with tepid water and close the frame early in the afternoon. Plenty of heat, and atmospheric moisture, with moderate ventilation, are essential details in the culture of frame Melons. Place mats or other material over the lights at night. Blenheim Orange, Ingestre Hybrid, and Hero of Lockinge are suitable varieties for growing in frames.

The Cherry House.—Established trees in Cherry houses that have passed through the stoning stage must be examined for the active little grubs that do so much damage. A night temperature of 50° to 55° should be maintained, and a little air admitted through the top ventilators. As the sun gains power, and the thermometer rises rapidly, ventilation must be liberally increased. With early varieties a very short time elapses between stoning and colouring, which makes it necessary to guard against aphis attacks before this period arrives. Trees with fruit or nearly ripe fruit should not be fumigated, as the nicotine would injure the flavour of the Cherries. The fruits will hang for a considerable time when ripe, but the house must be kept cool, dry, and well ventilated. If cold, wet weather intervenes, guard against damp by a gentle circulation of warmth in the hot-water pipes just sufficient to keep the house free from moisture. Precautions must be taken to keep birds from the houses by placing small meshed nets over the ventilators.

Plums.—Plum trees growing in borders and carrying full crops of fruit should be mulched and fed with diluted liquid manure, and, occasionally, soot water. Syringe the trees twice daily with clean tepid water, free from lime or other sediments. If not already thinned, the superfluous fruits should be removed at once with a pair of Grape scissors, leaving sufficient to form a crop spread evenly over the trees. Keep all shoots of cordons pinched at the third or fourth leaf, to preserve the symmetry of the trees. Closely pinch the side-shoots of trees trained on walls or trellises to cause fruit spurs to form. The leading shoots may be allowed to grow for some time to come. Plums, like Cherries, are subject to attacks by grubs, aphis, and red spider. The last will not be troublesome where the syringe is used freely. Aphis can be effectively dealt with by fumigation. Soot-water is an excellent stimulant for all stone fruits, and if it is prepared as follows there need be no fear of injury to fruit or foliage (except when the fruit commences to colour, when all syringing must cease). Place about a peck of soot in a sack, weight it so that it will sink to the bottom of a tank or cask of water. Do not disturb the sack, but use the water until it is gone, when the tank should be filled again. The water should show just a tinge of colour.

Peaches and Nectarines.—Young Peach and Nectarine trees require careful attention as regards thinning and tying of the shoots. Guard against over-cropping, and allow a space of at least 4 inches between the shoots. Retain those of medium size, and remove all others. By doing this the shoots that remain will receive more light and air, and the wood for next season's fruiting be better ripened.

Apples and Pears.—When the flowers of Pears and Apples in pots have set, and the fruit commences to swell, lightly spray the trees twice daily with tepid water free from all impurities. Never let the roots suffer from lack of moisture; nor yet be kept in a saturated condition. Light top-dressings or weak stimulants may be given the roots when the fruits are swelling.

EDITORIAL NOTICE.

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

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

Special Notice to Correspondents —*The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.*

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

Letters for Publication, *as well as specimens of plants for naming, should be addressed to the* **EDITORS**, 41, Wellington Street Covent Garden, London. *Communications should be* WRITTEN ON ONE SIDE ONLY OF THE PAPER, *sent as early in the week as possible, and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.*

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

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 52.5.

ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, *Thursday*, May 9, 10 a.m. Bar. 29.7, temp. 60° Weather—Sunshine.

Fruitfulness.

It is curious that our knowledge of the causes of fruitfulness of plants is so meagre. Apart from certain generalisations and beliefs, we really know nothing about it. Why this year the Pears are blossomless we cannot say; all that can be said is that after two good years the trees were exhausted. But in what way are they exhausted? They are making growth, as usual, and hence it must be a specific and not a general exhaustion. The old hypothesis, or rather way of expressing the fact, was that a plant produces a specific flower-forming material—a something which makes a bud become a blossom bud instead of a wood bud; but what that material is, and whether it indeed exists, we do not know.

The common belief that fruitfulness is in some way connected with a more concentrated and unfruitfulness with a more watery sap is probably correct. Actual determinations of concentration of sap, carried out by Mr. C. C. Wigans, of the Missouri Experiment Station, have demonstrated that the cortex sap from bearing spurs of fruit trees is more concentrated than that from non-bearing spurs, and that conversely the leaf sap in leaves of non-bearing spurs is more concentrated than that from bearing spurs; but whether this is a cause or a consequence of fruitfulness remains to be determined. The fascinating researches of Kleb, which have been described fully in these columns, tend to indicate that fruitfulness in the lower plants is associated sometimes with starvation phenomena—the plants become fruitful as their food supplies are approaching exhaustion—and it may be that fruitfulness even in the higher plants is induced by similar causes; as, for example, by a shortage of some special food. This, at all events, would fit in with the fact that when a plant is producing a heavy crop its growth is more restricted than when the crop is short.

The precocious flowering of starved plants is a fact of common observation, and the tendency of plants to bolt after they have sustained a check is another which points in the direction of fruitfulness owing its inception to the lack of something rather than the presence of a special flower-forming material.

But, after all, speculation and guessing, although legitimate in science as a means of jostling the mind out of its ruts, can never by themselves advance knowledge. For that experiment is the only means, and it is to be hoped that when the time comes for the resumption of the pursuit of knowledge some of our investigators will tackle this question of fruitfulness and provide us with the solution of what now remains enigmatical.

ROYAL HORTICULTURAL SOCIETY'S GENERAL EXAMINATION IN HORTICULTURE.—One hundred and thirty-four candidates entered for the Society's General Examination for Seniors, held on March 20, 1918. Four of them, however, were not present on the date appointed, and eleven were not placed. The examiners, the Rev. Prof. G. HENSLOW, M.A., and Mr. JAMES HUDSON, report that of the candidates there were none whose papers were of sufficient merit to warrant a place in the First Class; eleven, or 8 per cent., were placed in the Second Class; and 108, or 80 per cent., in the Third Class. In Section A (Principles), a large number of candidates answered fairly well the first two questions dealing with the nature of the soil, and with the importance of light, their significance in cultivation being understood. In Section B (Operations and Practice), those questions having a bearing on practical work were, on the whole, well understood. Twenty-five candidates entered for the Juniors' Examination, and of these three secured a Second Class, four a Third, and nine a Fourth Class.

MARKET GARDENING ADVISORY COMMITTEE.—Mr. R. E. PROTHERO has appointed a Horticultural Advisory Committee to advise the Board of Agriculture and Fisheries on all questions connected with the promotion of market gardening, fruit growing, and horticulture generally, and, in particular, with regard to the distribution of produce and the organisation of the trades connected with those industries in the situation created by the war. The Committee will be constituted as follows:—Representatives of the Board of Agriculture: Lt.-Col. Sir DAVID PRAIN (Chairman), Dr. F. KEEBLE, F.R.S. (Deputy Chairman), and Mr. A. G. L. ROGERS. Representatives of the Growers: National Fruit Growers' Federation, Messrs. W. COLTHUP, G. F. GLENNY, W. G. LOBJOIT, A. MARSHALL, L. OAKES, and E. S. WARWICK; National Farmers' Union (Kent Branch), Messrs. BERNARD CHAMPION and A. J. RAYNHAM; Horticultural Trades' Association of Great Britain and Ireland, Messrs. A. G. JACKMAN and G. W. LEAK; British Florists' Federation, Mr. G. MONRO; Lea Valley and District Nurserymen and Growers' Association, Mr. JOSEPH ROCHFORD; Market Gardeners, Nurserymen and Farmers' Association, Mr. A. J. LEENEY (Worthing), and Mr. R. R. ROBBINS (Middlesex). Representatives of the Distributors: National Federation of Fruit and Potato Trades' Association, Messrs. ERNEST GLOVER, A. S. HARPER, and THOMAS MAJOR; London Fruit, Flower, and Vegetable Markets Association, Mr. F. R. RIDLEY; London and Provincial Fruit Buyers' Association, Mr. JAMES BRADNUM; London and Home Counties Retail Fruiterers' and Florists' Association, Mr. E. L. VINDEN; Fruit Preservers' Association, Mr. W. R. DEAKIN. Together with Fruiterers' Company, Mr. STANLEY MACHIN; Gardeners' Company, Mr. FRANCIS AGAR; and Royal Horticultural Society, Lord LAMBOURNE and Sir HARRY J. VEITCH. The joint secretaries are Mr. G. P. BERRY and Lieutenant R. WELLINGTON.

WOODLAND INDUSTRIES.—It is remarked in the *Journal of the Royal Society of Arts* that the Forestry Sub-committee of the Reconstruction Committee, in their recent report, state that the wood distillation industry had failed to develop in Great Britain before the war, not because the raw material was not available or too expensive, but because of unscientific methods and lack of encouragement from the Government. The report refers to what has been accomplished by the utilisation of the produce of some 2,000 acres of coppice in the Crown woods at Tintern. Attention is also called to other small industries, including tent-peg and spoke making, that have been set on foot during the war as illustrating the possibility of further utilisation of coppice material.

COFFEE IN BRITISH GUIANA.—The *Journal of the Board of Agriculture*, British Guiana, states that the Coffee industry of the colony continues to increase. In 1905 the area under cultivation was 1,432 acres; in 1910, 2,546 acres; and in 1915, 4,468 acres. The Liberian variety is chiefly planted, as it gives good returns, and costs less to cultivate than the Arabian variety. Most of the Coffee produced in the colony is consumed locally, only a small proportion being exported.

SOIL STERILISATION BY FORMALIN.—For the sterilisation of soil of glasshouses—and, for that matter, small areas in the open—formalin (formaldehyde) is said * to give valuable results. The solution should be made by mixing 3½ pints of formalin (commercial 40 per cent.) with 50 gallons of water, and used at the rate of 1 gallon to the square foot.

NEW FOOD PRODUCTS.—The Council of the Royal Society has appointed a committee to investigate and report on the possibility of obtaining and replacing food materials and other necessaries by the utilisation of natural products not hitherto generally employed for such purposes. Suggestions as to such products and the means of organising their collection should be addressed to the secretary of the Natural Products Committee, Royal Society, Burlington House, Piccadilly, London.

WAR ITEMS.—We deeply regret to learn that Lieut. ARTHUR BARNES, eldest son of Mr. N. F. BARNES, Eaton Gardens, Cheshire, has been killed in action. Lieut. BARNES formerly served in the Royal Horse Guards (Blue), and received his commission in the Cheshires. He had been acting captain some time, and was about to be gazetted to that rank.

—We regret to learn that Lieut. JOHN O'BRIEN, son of Mr. JAS. O'BRIEN, was wounded in the left hand in action on April 30, in Portuguese East Africa. The wound is not expected to prove dangerous.

PUBLICATIONS RECEIVED.—***Bee-keeping in War-time.*** By W. Herrod-Hempsall, F.R.S. (London: *Country Life*, Ltd.) Price 9d. net.

* Ohio Experiment Station, Circular 151.

HOME CORRESPONDENCE.

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

Plums in Pots. This spring our earliest plants in pots have set a most abundant crop of fruit. Our usual method of fertilisation, by employing a hive of bees, was practised. No actual forcing has been attempted, as these trees, after having been forced for twenty years, come to bloom almost of their own accord, but in a temperature at least a few degrees above freezing point has to be maintained. We never had a greater profusion of fruit upon Count Althann's Gage or Early Transparent Gage. Other Transparent Gages, Kirke's Early Prolific Jefferson, and Blue Rock, have also set well. *J. H. Ivins, Gannochy, Hoose, Gardens, Perth.*

Manuring Experiments on Fruit. A sentence in Jethro Tull's *Horse-Hoeing Husbandry*, which I happened to take up just after reading the article on "Manuring Experiments on Fruit," on p. 135, set me wondering on what plan the plots had been laid out at the Ridgmont Fruit Farm. The sentence was in reference to the tap-root: "This tho' it goes very deep has horizontal ones passing out all round the Sides and extend to several Yards Distance from it, after they are be their Moisture, and rotten Timber become invisible to the naked Eye." I wondered what precautions had been taken to prevent the invasion of the plot to which one kind of manurial treatment had been given by those roaming roots from a neighbouring plot to which another was driven? In the Report No. 15 (1916) there are many experiments to learn that in the Ridgmont soil fruit trees assume "a remarkable shallow rooting habit" as is only to be expected, for the depth to which roots may penetrate depends largely upon the presence or absence of air, and in Ridgmont soil is, one may suppose, very wet at a little below but beyond telling us that there were 21 plots of 18 trees of certain varieties on paradise stock the report is silent. The first report, however, shows us that each "plot" consisted of a single line of trees planted 11 feet from the lines on each side of it. The trees in one line received one dressing, those in the next another. Other details are to be learnt from the first, second, fourth, and ninth reports, and they go to show that the roots spread far, but there is nothing whatever to show that the roots of one line of trees did not benefit or suffer, as the case may be, from the treatment of the lines on either side at least. It is a pity this point seems to have been overlooked in the compilation of the reports, for those who are seriously occupied in the growing of fruit are desirous of knowing the conditions under which experimental results have been obtained, and here is one which seems to render doubtful the validity of the whole of the conclusions based upon the results of manuring at Ridgmont. To point to the Millbrook experiments where positive results were evident in somewhat similar circumstances, will not explain away this disturbing factor, for there the soil is very different, and probably the nature of the root development will also be different too. Another omission seems regrettable, too. We are given comparisons between the crops, but nowhere can we discover an indication of the actual yields the trees are giving. No system of manuring will compensate for treatment detrimental to the trees in other directions, and the enquiring fruit grower would have welcomed evidence to show that the trees normally treated at Ridgmont were producing annually crops such as might reasonably be expected from trees of their variety and age. Such a statement would have been more illuminating than the figure 100 used as a basis for the "normal" trees, and would have tended to allay any fear the reader's mind might harbour that perhaps the lack of response to manuring was due to some other disturbing factor in the tree's growth. It is to be hoped that further experiments may be set afoot ere long where precautions are taken to prevent the treatment of one plot influencing the trees on another, for the question of the need for manure in the fruit plantation is one of immense and increasing importance, for fruit growing is increasing, and supplies of stable and farmyard manure are decreasing. *F. J. C.*

SOCIETIES.

ROYAL HORTICULTURAL.

May 7.—The fortnightly meeting in the Drill Hall on Tuesday last was the most successful for many months past. The exhibition was sufficient to fill the large building, and there were numerous visitors. The importance of the meeting was largely accounted for by the fact that the National Rose Society had arranged a number of special classes for Roses. This gave raisers the opportunity of showing their new seedling varieties, which they have hitherto been able to do at their own spring Rose shows, which, of course, this year, on account of the cold

The Floral Committee recommended three Awards of Merit to new plants and awarded seven medals to collections.

Messrs. Barr and Sons' exhibit of Daffodils and Tulips was the best group in the section, and the Committee gave an Award of Merit to a seedling Daffodil shown by the same firm. The Award of Merit given to Narcissus Crimson Beacon (see p. 181) at the last meeting (see p. 181) was raised to a First-class Certificate.

Floral Committee.

Present:—Messrs. H. B. May (chairman), J. Cheal, S. Mortimer, G. Routhe, R. C. Notcutt, W. J. Bean, J. Hudson, C. R. Fielder, W. Howe, J. Jacques, A. Turner, H. J. Jones, C. Dixon, J. Douglas, W. P. Thomson, E. H. Jenkins, G.

Fig. 89.—TWO NEW GOLD MEDAL ROSES.

Above—Lyon Garden (crimson). Below—Frances Gaunt (apricot colour). (See p. 201.)

tions. The National Society's Gold Medal was awarded to two new varieties, and Certificates of Merit were awarded to several others. Groups of Roses were exhibited by traders and others, and received awards from the National Rose Society.

Exhibits before the Floral, Narcissus and Tulip, and Orchid Committees were of a high standard.

There was one exhibit of especial importance—two hundred seedling Potatos from Messrs. Sutton and Sons—before the Fruit and Vegetable Committee. The exhibit was given a Certificate of Appreciation.

The Orchid Committee awarded a Cultural Certificate to Mr. Collier for a magnificent plant of Laelio-Cattleya J. E. Bickleck, Fowler's variety, and four Medals to groups

Paul, W. Cuthbertson, J. F. McLeod, W. Mouter, Jas. Hudson, and H. Cowley.

Awards of Merit.

Rhododendron Royle magnificum.—A glorified form of the hardy Chinese species R. Royleï; the flowers are both larger and brighter in colour than those of the type. The interior of the blossom is salmon-pink, which darkens on the outside towards the calyx tube to rich crimson, with a bluish bloom. Trusses contain from five to six of the wide-spreading, pendant blossoms which are well set off by the handsome leaves, silvery grey beneath and Holly green above. Exhibited by Mr. G. Reuthe.

Primula spicata.—This species has the appearance of a miniature P. mutans, but the flowers are held more erect. They are a beautiful shade of

lavender blue, with a white interior; both flower-stem and calyx bear white farina. The foliage closely resembles that of the common Primrose, but is much smaller, and is delicately pilose. The species is a native of China, and was introduced by Mr. Geo. Forrest. It will be very suitable for growing in the Alpine house, or in parts of the rock-garden where its delicate beauty will not be overlooked. Shown by Messrs. R. WALLACE AND CO.

Polyanthus Miller's Giant.—The award was made for a large-flowered strain of Polyanthus, with the usual wide range of colouring seen in this spring flower, including blue, primrose, yellow, crimson, and maroon. Exhibited by Mr. G. W. MILLER.

GROUPS.

R. L. MOND, Esq., Combebank, Sevenoaks (gr. Mr. C. Hall), filled one of the long tables with plants of *Calceolaria Clibranii*, a beautiful hybrid raised in the John Innes Institute, Merton. The plant is excellent for the greenhouse or conservatory; it bears lax trusses of clear, rich, self-yellow flowers. The plants shown were remarkably well grown, and were awarded a *Silver-gilt Banksian Medal*.

Mr. L. R. RUSSELL, Richmond, showed ornamental-leaved and flowering shrubs, for which a *Silver Flora Medal* was awarded. Japanese Maples were a feature of this group, and acted as foils to Laburnums, Wistarias, and Cytisus praecox in bloom.

Messrs. H. B. MAY AND SONS were also awarded a *Silver Flora Medal*. Their exhibit consisted of indoor Ferns, interspersed with bright groups of flowering plants, such as Verbenas, Hydrangeas, Clematis, and scarlet Salvias.

Silver Banksian Medals were awarded to Messrs. STUART LOW AND CO., for Perpetual-flowering Carnations; Mr. G. W. MILLER, for hardy flowers; Messrs. PIPERS, for hardy flowers and flowering shrubs, which included a magnificent specimen of Enkianthus campanu-

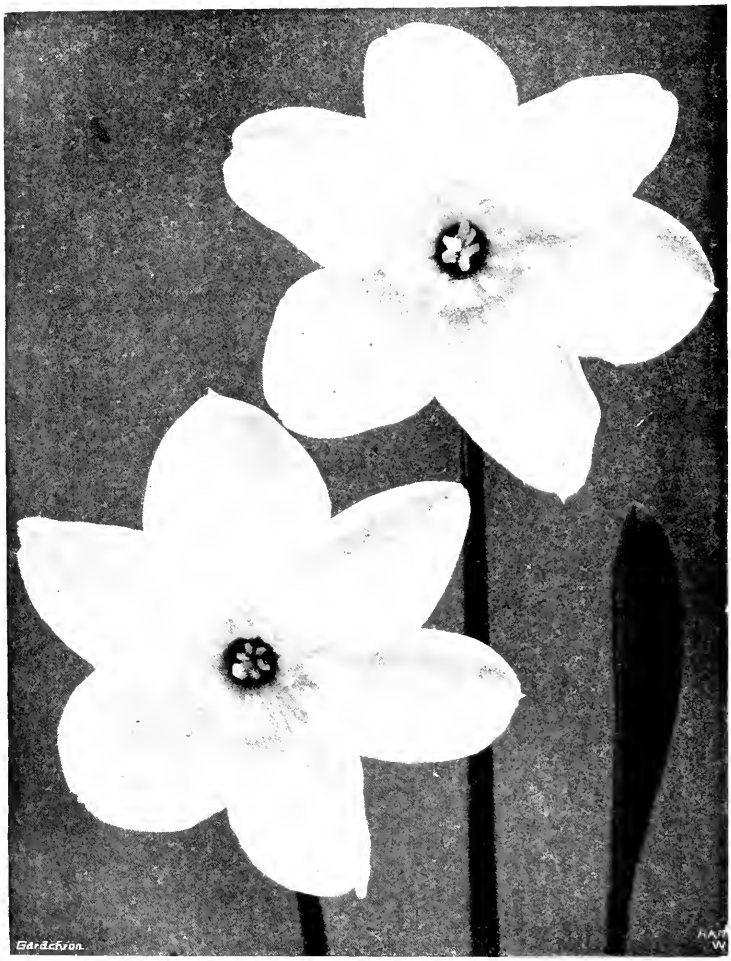


FIG. 87. NARCISSUS ANCHORITE.

(See Awards by the Narcissus Committee.)

latus and Schizandra chinensis rubra; and Mr. G. REUTHE, for hardy plants, Rhododendrons, and uncommon shrubs. The Rhododendrons were the chief feature of Mr. Reuthe's exhibit; besides the fine form of R. Roylei which gained the Award of Merit, he showed the curiously flowered R. spinuliferum, which has fleshy-coloured flowers, ovate in shape, not expanding at the mouth, with the stamens protruding a considerable distance from the apex; and R. campylocarpum, the finest of all yellow-flowered Rhododendrons.

Orchid Committee.

Present: Sir Jeremiah Colman, Bart. (in the chair), Sir Harry J. Veitch, Messrs. Jas. O'Brien (hon. secretary), R. Brooman-White, Walter Cobb, W. H. White, W. J. Kaye, J. Charlesworth, Arthur Dye, T. Armstrong, E. R. Ashton, Pantia Ralli, Frederick J. Hanbury, Stuart Low, R. A. Rolfe, Fred K. Sander, and C. J. Lucas.

AWARDS.

CULTURAL COMMENDATION.

To Mr. J. COLLIER, gardener to Sir Jeremiah Colman, Bart., Gatton Park, Surrey, for a plant of Laelio-Cattleya J. F. Birkbeck, Fowler's variety, with six grand flowers, one spike bearing four blooms. The same plant was shown by the late Mr. J. Gurney Fowler on March 30, 1915, when it was unanimously awarded a First-class Certificate. In Mr. Collier's hands it has greatly improved beyond its then fine form.

The cross is between Cattleya Mendelii and Laelio-Cattleya Henry Greenwood (L. C. Schilleriana × C. Hardyana), and it appears to have developed the good qualities of all the parents. The sepals and petals are white with a slight blush tint, the labellum ruby-crimson with gold lines from the base to the orange-shaded centre.

NOVELTIES.

SIR JEREMIAH COLMAN showed Odontoglossum Gatton Princess (Queen of Gatton × eximium). The plant had a fine spike of well-formed, light yellow flowers, which are profusely spotted with dark purplish-red. The lip is white, and has a dark red blotch in front of the yellow crest.

A. P. CUNLIFFE, Esq., Woodford, Salisbury (gr. Mr. Tindall), showed a remarkably fine form of Cattleya Tityus (Enid × Octave Doin). The large, bright, rose-coloured flowers have a ruby-crimson front to the lip.

GROUPS.

Messrs. ARMSTRONG AND BROWN were awarded a Silver Flora Medal for a group of Odontoglossums, Odontiodas and Miltonias. Among the Odontoglossums were several handsomely blotched *O. crispum* raised from home-raised seed, and other showy hybrid Odontoglossums. Miltonia Frank Reader, a large, rose-pink flower with dark, ruby-crimson mask on the lip, and Odontioda Henryii, with a fine spike of orange-scarlet flowers, were the most striking plants in their respective sections.

Messrs. CHARLESWORTH AND CO. were awarded a Silver Flora Medal for a group of handsome Odontoglossums and other showy varieties. Odontoglossum Dorcen (*eximium* × Empress of India), a pretty seedling, bore one large white flower prettily marked with light purple; Odontioda Joan variety, with dark lilac flowers, Oda Brewer, and forms of Cattleya Tityus, were specially attractive.

Messrs. STUART LOW AND CO. were awarded a Silver Flora Medal for a varied and interesting group which included several rare species. *Dia crium bloomfontum*, with pure white flowers, and several bright red Renanthera Imschootiana, showed up well, whilst among the hybrids the finely formed Laelio-Cattleya Moonbeam (C. Schroderae × L. C. G. S. Ball), with clear apricot-yellow flowers having an orange centre to the lip, and Odontoglossum Oberthürii (Adrianae × harvengtense), with handsome light canary-yellow flowers spotted with chestnut-red and well-rounded labellum, gave good examples of the hybridist's success.

Messrs. C. E. WATERS AND CO. were awarded a Silver Banksian Medal for a group of well-flowered Dendrobiums, with Cattleyas, Brasso-Cattleyas, and Odontoglossums.

Narcissus and Tulip Committee.

Present: Mr. E. A. Bowles (in the chair), Rev. Joseph Jacob, Miss Willmott, Messrs. W. Poupart, W. B. Cranfield, R. W. Wallace, Peter B. Barr, Herbert Smith, G. W. Leak, F. Herbert Chapman, J. T. Bennett-Poë, R. A. Wallace, and Chas. H. Curtis (hon. sec.).

AWARDS.

FIRST-CLASS CERTIFICATE.

Narcissus Crimson Braid.—This fine Barrii form, which gained an Award of Merit at the meeting held on April 23 last (*see Gard. Chron.*, May 4, 1918, fig. 83), was given the higher award of a First-class Certificate. Shown by Messrs. HERBERT CHAPMAN, LTD.

AWARD OF MERIT.

Narcissus Anchorite (see fig. 87).—A large flowered bicolor Barrii variety having blooms

about 3¼ inches across. The perianth is white and well formed, and the cup is bright pale yellow, beautifully trilled and lending its colour to stain the bases of the perianth segments. It is a tall-growing form, averaging about 19 inches in height. Shown by Messrs. BARR AND SONS.

GROUPS.

The most important group was staged by Messrs. BARR AND SONS, and was composed of Tulips and Daffodils. The former flowers were rather small and dark-coloured varieties predominated, notably La Tulipe Noire, Zulu, Valentine, Viking, and Sirdar. Tulipa viridiflora praecox was also included. Among Daffodils, a greenish-yellow trumpet seedling was conspicuous, with Anchorite, White Lady, Thisbe, and Minerva, the latter a very neat Poet's Daffodil, not far removed from N. poeticus of Linnaeus. Silver-gilt Banksian Medal.

Narcissus Crimson Braid was shown in grand condition by its raisers, Messrs. HERBERT CHAPMAN, LTD. The same firm staged a bunch of flowers of the Narcissus poeticus of Linnaeus. This form was thought to have been lost to cultivation, but Mr. William Poupart, Twickenham, had a small stock, and distributed a few bulbs to friends, and it was from this stock that the flowers shown were produced.

Mr. W. B. CRANSFIELD, Enfield Chase, exhibited up a few seedling Daffodils, notably Cantata, a bright-eyed Poeticus variety, and Cansonet, a bicolor Barrii of considerable beauty and substance.

Fruit and Vegetable Committee.

Present: Messrs. A. H. Pearson (in the chair), J. Harrison, W. Bates, W. H. Divers, A. Bullock, E. Beckett, G. Kelf, O. Thomas, A. R. Allan, E. A. Bunyard, H. S. Rivers, Jos. Cheal, and W. Wilks.

Messrs. SUTTON AND SONS contributed an exhibit of much interest and value—a selection of two hundred seedling Potatos of their "Casbi" strain. These represented the selection of 70,000 crosses, and including first-early, second-early and maincrop varieties. None of the varieties was named, but we understand that all have shown the desirable qualities of productiveness, flavour, and robust constitution after trials extending over a number of years. (Certificate of Appreciation.)

NATIONAL ROSE SOCIETY'S CLASSES.

THE National Rose Society arranged a number of classes for Roses in connection with the Royal Horticultural Society's fortnightly meeting on Tuesday last. There were no money prizes, but each exhibitor was allowed to show his flowers as he pleased.

There were three nurserymen's groups, of which that staged by Mr. ELISHA HICKS was particularly pleasing. The centre consisted of a large group of Mojesti (a very deep and perhaps slightly sombre colour when grown under glass), which was brightened by a pretty bank of R. Harrisoni, with its cheerful yellow flowers and small decorative foliage. Flanking this group were two stands of Mrs. Elisha Hicks, Joanna Bridge, the fragrant Mrs. George Norwood on the one side, and on the other Mme. E. Herriot, and a particularly bright pillar of the dwarf Polyantha Ellen Poulsen, which seems to be as good under glass as it is in the garden.

Messrs. B. R. CANT'S group included several Roses of interest. In the centre was a large group of Dr. Williams's climbing Rose, Emily Gray, with deep yellow flowers and large foliage of the Noisette type. It has a certain, though not pronounced, fragrance of its own, and is a colour that has long been sought for in a climbing variety for the garden, Maréchal Niel, alas, being useless to most of us, except under glass. There was here also a good stand of Golden Ophelia and one of Augustus Hartmann. The attraction of this Rose lies in its brilliant colouring, and it was no surprise to find the shade of the petals as grown under glass even more brilliant than when grown in the open. This fine variety has, unfortunately, a certain dislike of transplanting, and many seem to have failed with it through not pruning sufficiently hard after moving it.

Messrs. PAUL AND SON, Cheshunt, showed a fine group of standards and pot Roses, among which Ethel, Mme. Segnad Weber, Edward Mawley, and G. C. Ward were specially worth notice.

The exhibits of amateurs were not numerous, but Mr. E. J. HOLLAND showed a few exhibition blooms in baskets and vases showing great perfection of culture. Some wonderfully fine blooms of Mrs. Foley Hobbs were contained in one basket, while Mrs. Welsh, William Shean, and Edgar Bamber were also noticeable, both for large size and the nicely formed character of the flowers.

Mrs. O. FISHER showed a beautiful bowl of Ophelia, and Mrs. COURTNEY PAGE two bowls, of which that containing Melody was particularly pleasing.

SEEDLING ROSES.

Seedling Roses always attract attention, and several of those displayed were worthy of something more than passing notice. All those exhibited were of the H.T. section.

The first and perhaps the most perfect in form was Mrs. Elisha Hicks. This Rose possesses a delightful fragrance, which brought one back several times in the day to inhale its sweet perfume. The colour is a soft blush pink, very clear and delicate, and the growth seemed of a satisfactory character. The variety was awarded a Card of Commendation.

A Gold Medal was awarded to Messrs. B. R. CANT AND SONS for a crimson variety named Covent Garden seedling, 36, of a colour near that of Hoosier Beauty, but practically without perfume. They were also awarded a Card of Commendation for Golden Ophelia, which is a well-formed flower, carried well on good stiff stalks of a bright golden colour. The variety was probably not shown quite at its best, and when this occurs it should secure the Gold Medal without difficulty.

Messrs. A. DICKSON AND SON exhibited several new Roses. They were awarded a Gold Medal for a decorative Rose named Frances Gaunt (see fig. 36), of a pinkish apricot, almost orange-coloured flower of moderate form. The award received some criticism, but was probably justified by the colour, which certainly looked well in the mass, and seemed to improve on a second and third visit.

A more beautiful flower of excellent form was Molly Bligh, which received a Card of Commendation. The colour is pink with a tinge of apricot and a suspicion of brick-red shading, and the flower reminded one, both in colour and form, of that finely formed Rose, Lady Moyra Beauclerc, and like this Rose, it seemed to have the defect that the edges of the petals are easily injured. Notwithstanding this fault, it is a lovely flower, which one could visit again and again with an increasing satisfaction, which was not diminished by its pleasing perfume.

Chameleon is a fairly well formed flower of a distinct orange or strawberry pink colouring, of medium size, and Mrs. Dunbar Butler a pretty pink form. *White Rose.*

CROPS AND STOCK ON THE HOME FARM.

SUMMER FALLOWS.

THE summer fallow is an old-fashioned method of cleaning land and laying a thorough foundation for a future Wheat crop. Some think such a method of Wheat preparation a waste of land, yet the plan cannot be surpassed. They prefer to sow some catch crop, even if the land is foul, in which case it will always be weedy, undesirable ground. It is much better to summer fallow such land and thoroughly clean it once for all. Plough sufficiently deep to get under the roots of the Couch, cross plough within a short period, drag over the surface to disintegrate the soil and get the Couch on the top, harrow to further remove the soil, and roll the surface if the ground is cloddy. Collect the rubbish by the aid of chain harrows, and burn it in small heaps over the ground. When this is completed, plough again to disturb any roots missed the first time, and repeat the collecting and burning process. All such work needs to be done in dry weather to be effective.

STIMULATING THE OAT CROP.

Where Oats were sown on newly broken up pasture and especially where manure was not added at sowing time, I note in many cases the Oat plant needs some assistance to enable it to develop vigorously, especially where wireworm is prevalent. No time should be lost in assisting the growth by sowing evenly over the surface 1 cwt. sulphate of ammonia per acre.

POTATOS.

No time should be lost in completing the planting of the Potato crop. The land is now working well, except in a few instances where the soil is heavy. Turf land newly broken in January has come to hand remarkably easy, and the promise of crops under such conditions are favourable. The early plots, whether on the flat or in ridges, should now be harrowed over to kill the first crop of weeds, loosen the soil, admit air, and enable the cultivator or horse-hoe to run the more freely between the rows later.

SUGAR BEET.

There seems to be a prospect of factories being erected in various parts for the manufacture of sugar from Sugar Beet. If this suggestion is to be practical then the growing of Sugar Beet will be encouraged, because, with a reasonable prospect of a fair return, farmers will grow the crop.

During the past two years I have proved that Sugar Beet can be grown successfully in this county. I have at the present moment many good roots still in the ground, which I fear I shall have no use for, as although horses, pigs and cattle eat them willingly, they cannot consume so many as I have grown. The middle of the present month is a good time to sow the seed, at the rate of 6 lbs. per acre, drilled like Mangold or even a trifle closer. The deeper the land is broken and disintegrated the better, as more roots are made than in the case of Mangold. Manure, too, should be evenly distributed, whether it is farmyard dung or superphosphate; the latter should be sown over the plot at the rate of 4 cwt. per acre.

THE GOVERNMENT DRAINING SCHEME.

I am pleased to see that the much needed legislation for dealing with land drainage is on the taps, and likely to come into effect. One point which ought not to be lost sight of is the neglect of farmers to clean out ditches and watercourses. I come across many instances of this while inspecting farms with a view to the ploughing of grass land for corn crops. Too many farmers, as an excuse for ploughing grass land, point to the wet condition of the soil, but they forget to say this is caused by the neglect to keep the ditches clean. Where farms are situated on hills there does not seem to be much excuse for having wet fields if reasonable attention is paid to the natural watercourses. *E. Molyneux.*

LINSEED.

THE Food Production Department strongly recommends farmers to grow a small area of Linseed this year. The crop is particularly suited to the circumstances of the present time. It should be sown about the middle of May. The crop is practically immune from wireworm, and may therefore be taken after old grass or used for filling up a thin corn crop or replacing one that has failed. When it is too late to sow Barley, there is still time enough for Linseed. The possession of even a small quantity of Linseed next autumn should go far to solve the difficulties at present attending the rearing of calves. It is particularly rich in oil (35 per cent.) and in albuminoids (23 per cent.). A pound of Linseed is for general purposes equal to nearly 2 lbs. of Oats or 1½ lb. of the best oilcake or cereal food. In addition to this, Linseed is a crop that can be cultivated easily. A fine surface tilth and a light covering are all that it needs. It is suited to most parts of the country and to most soils.

There should be no difficulty in securing seed. Stocks of both home-grown and Argentine Linseed suitable for seed are available. Particulars as to the price may be obtained from the Controller of Supplies, Food Production Department, who will also forward on application a memorandum giving full information as to the cultivation and uses of Linseed.

MARKETS.

COVENT GARDEN, May 8.

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

(All 48's, per doz. except where otherwise stated).

	s. d.	s. d.		s. d.	s. d.
Arallas ...	7 0	– 8 0	Fuchsias, arbors ...	12 0	15 0
Araucaria excelsa	7 0	– 8 0	Genistas ...	18 0	24 0
Asparagus plumosus ...	10 0	12 0	Heliotropes ...	12 0	15 0
— Sprengeri ...	9 0	10 0	Marguerites, white	9 0	10 0
Aspidistra, green ..	36 0	42 0	Mignonette ...	12 0	15 0
Boronia megastigma ...	18 0	24 0	Pelargoniums ...	15 0	18 0
Cyclamens ...	21 0	24 0	— zonal, various	6 0	8 0
Cinerarias ...	10 0	12 0	— 60's, vari us	3 0	4 0
Erica persoluta ..	36 0	42 0	— ivyleaf, various	12 0	15 0
— Wilmoreana ..	30 0	36 0	Roses, polyanthus	24 0	30 0
			— rambler (each)	5 0	12 0

Ferns and Palms: Average Wholesale Prices.

	s. d.	s. d.		s. d.	s. d.
Adiantum cuneatum, 48's, per doz.	9 0	10 0	Nephrolepis, in variety, 48's ...	12 0	18 0
— elegans ...	9 0	10 0	— 32's ...	24 0	36 0
Asplenium, 48's, per doz. ...	9 0	12 0	Pteris, in variety, 48's ...	8	0 12 0
— 32's ...	21 0	24 0	— large 60's ...	4 0	5 0
— nidus, 48's ...	10 0	12 0	— small 60's ...	3 0	3 6
Cyrtomium, 48's ...	8 0	10 0	— 72's, per tray of 15's ...	2 0	2 6

REMARKS.—Business is basket in this department, and flowering plants are more in demand. The latest lines are Fuchsias, Heliotropes, Pelargoniums (double and scarlet self-coloured varieties), and Deutzias. Palms and Ferns are in good demand. Aspidistras are getting very scarce.

Cut Flowers, &c.: Average Wholesale Prices.

	s. d.	s. d.		s. d.	s. d.
Anemone fulgens per doz. bun ..	4 0	5 0	Lily-of-the-Valley, per doz. bun ...	30 0	42 0
Arums—			Narcissus, double white per doz. bun	8 0	10 0
— (Richardias), per doz. blms.	2 0	10 0	— poeticus, per doz.	4 0	5 0
Azalea, white, per doz. bunches ..	6 0	– 8 0	Orchids, per doz.:—		
Carnations, per doz. — blooms, best American var	3 0	5 0	— Cattleyas ...	15 0	16 0
Croton leaves, per bun.	1 3	1 6	Pelargoniums, double scarlet, per doz. bunches ...	12 0	18 0
Daffodils (single), per doz. bun			— white, per doz. bunches ...	6 0	8 0
— Emperor ...	4 0	5 0	Primroses, per doz bunches ...	1 0	1 3
— Victoria ...	4 0	4 6	Roses, per doz blooms—		
Eucharis, per doz. blooms	3 0	4 0	— Frau Karl Druschki ..	3 0	5 0
Gardenias, per box (12's) ...	5 0	6 0	— General Jacqueminot ...	2 6	3 0
— (18's) ...	3 0	4 0	— Joseph Lowe ...	4 0	5 0
Gladiolus, Peach Blossom, per doz. bun.	36 0	—	— Lady Hillingdon	3 0	4 0
Gypsophila, white, per doz. bunches	12 0	15 0	— Ladylove ...	4 0	6 0
Heather, white, per doz. bun .	9 0	12 0	— Liberty ...	4 0	6 0
Iceland Poppies, per doz. bunches	6 0	—	— Madame Abel Chatenay ...	3 0	6 0
Iris, Spanish, per doz. bunches—			— Niphetos ...	3 0	4 0
— white ...	36 0	42 0	— Richmond ...	4 0	6 0
— blue ...	36 0	42 0	— Sunbeam ...	4 0	6 0
— yellow ...	36 0	42 0	Stephanotis, per 12 pips	3 6	4 0
— mauve ...	30 0	36 0	Stock, English, per doz. bunches ..	6 0	8 0
Ixia, red, per doz. bunches ..	2 6	3 0	Sweet Peas, various, per doz. bun .	0 6	1 0
Lilium longiflorum, long	9 0	10 0	Tulips, per doz. blooms—		
— — rubrum, per doz long	5 0	6 0	— Darwin, various	1 0	1 6
— — short, per doz blooms ..	2 6	3 0	— Single, white ..	1 0	1 6
			— — Yellow ..	1 0	1 6
			— — Pink ...	1 0	1 6
			— — Red ..	1 0	1 6
			Viola cornuta, per doz. bun. ...	3 6	4 0

Cut Foliage, &c.: Average Wholesale Prices.

	s. d.	s. d.		s. d.	s. d.
Adiantum (Maiden hair Fern) best, per doz. bun...	6 0	– 8 0	Berberis, per doz. bun. ..	6 0	– 8 0
Asparagus plumosus, long trails, per half dozen ..	2 6	– 3 0	Carnation foliage, doz bunches ..	4 0	– 5 0
— — medium, doz. bunches	18 0	– 21 0	Cycas leaves, per doz. ..	3 0	– 6 0
— Sprengeri ...	10 0	15 0	Ivy leaves, per doz. bunches ..	2 6	– 2 6
			Moss, gross bun .	7 0	– 8 0
			Smilax, per bun. of trails ...	4 0	– 4 6

REMARKS.—The market is well to very supplied with blooms, but prices remain high, more especially for white flowers. A few boxes of the double white Narcissus flore pleno Narcissus poeticus White Stock and Red Inia, Iceland Poppies, and Gypsophila are coming in, received from the Scilly Isles in excellent condition. Red Roses are scarce. Carnations are good, and sufficient for the demand. Sweet Peas and Lilium longiflorum are good and clean. There are abundant supplies of Darwin Tulips principally from out of doors. Daffodils are almost finished, but good blooms are still being sent from Scotland. The chief varieties are Emperor and Victoria which had a ready sale.

Fruit: Average Wholesale Prices.

	s. d.	s. d.		s. d.	s. d.
Apples:— — English, per box	3 0	4 5 0	Grapes, per lb.— — Muscats per lb.	8 0	25 0
Dates, per box	1 8	—	Lemons, per case.	16 0	30 0
— Arabian, per cwt. ..	42 0		Melons, each ...	6 0	10 0
Figs, Worthing, per doz	3 0	12 0	Oranges, per case	20 0	120 0
Gooseberries, green, per peck .	8 0	—	Peaches, per doz	12 0	30 0
Grapes:— — Black Hamburgh, per lb	6 0	10 0	Strawberries, forced per lb.	4 0	– 8 0
			Walnuts, kiln dried, per cwt.	8 0	110 0

Vegetables: Average Wholesale Prices.

	s. d.	s. d.		s. d.	s. d.
Artichoke, globe, per doz. ...	4 0	– 0	Onions, French, per cwt. ...	44 0	46 0
— Jerusalem, per ½ bushel	1 6	—	— spring, per doz. bun. ...	3 0	4 0
Asparagus (English), per bundle ...	3 0	– 8 0	— Valencia, per case (4 tiers) ..	45 0	55 0
— Lauis ..	3 0	– 4 0	— — (5 tiers) ...	45 0	55 0
Beans:— — French (Channel Islands), per lb.	1 6	– 2 0	Parsley, per strike ..	2 0	– 3 0
Beetroot, per cwt.	7 0	– 8 0	Parsnips, per bag ..	6 0	– 7 0
Carrots, new, per doz. bunches	12 0	15 0	Peas, per lb, ...	1 3	– 2 0
— per bag ...	8 0	10 0	— French, per lb.	0 4	– 0 5
Cauliflowers per doz	4 0	7 0	Potatos, new, per lb.	7 0	– 7 6
Celery, per bundle	1 6	– 2 6	Radishes, per doz. bunches .	1 0	– 2 6
Cucumbers, per doz	6 0	– 9 0	Rhubarb, forced, per doz ...	2 6	– 3 0
Endive, per doz ..	2 0	– 3 0	— natural, per doz.	6 0	– 7 0
Garlic, per lb.	0 8	0 10	seakale, outdoor, per ½ bns ...	10 0	12 0
Greens, per bag	5 0	– 6 0	Shallots, per lb.	0 9	– 1 0
Herbs, per doz bun.	2 0	– 4 0	Spinach, per bus. ..	2 6	– 3 0
Horseradish, per bun.	3 6	– 4 6	Swedes, per bag ...	3 0	– 4 0
Leeks, per doz. bun.	4 0	– 6 0	Tomatos, per lb. ..	1 6	– 2 6
Lettuce, Cabbage and Cos per doz	0 6	– 2 6	Turnips, per bag ...	12 0	14 0
Mint, forced, per doz. bun ...	3 0	– 4 0	— new, per bunch	1 3	– 1 6
Mushrooms, per lb.	2 0	– 3 0	Vegetable Marrows, per doz. ...	8 0	10 0
Mustard and Cress, per doz. punnets	1 0	– 1 3	Watercress, per doz	0 8	– 0 10

REMARKS.—Apples from all sources are now practically exhausted. Supplies of Black Grapes are increasing daily. Muscats are also on offer. Supplies of Peaches, Strawberries, Figs, and Melons all show an increase. Tomatos (English and Channel Islands), Peas, Beans, Marrows, and Cucumbers are all more plentiful. Mushrooms continue a fair supply. Green Gooseberries are fairly plentiful. Asparagus (French), Cavaillon and Lauris is getting scarcer, but consignments from Worcester are now reaching the market. The market is well supplied with Long Scarlet and Turnip Radishes. Lettuces, Spring Cabbages, and Cauliflowers are all plentiful. *E. H. R. Covent Garden Market, May 8, 1918.*

Obituary.

MAURICE DE VILMORIN.—The funeral of Monsieur Maurice de Vilmorin, whose death on April 22 we announced in our last issue (p. 192), took place in Paris on April 29, in the presence of a large and distinguished gathering. Maurice de Vilmorin was in his 70th year. He was a son of the great French biologist and agronomist, Louis de Vilmorin, brother and uncle respectively of the late Henry and Philippe de Vilmorin; co-proprietor of the firm of Vilmorin, Andrieux et Cie; vice-president of the French Société Nationale d'Horticulture, of the Dendrological Society, and of the Acclimatisation Society, and a member of the Academy of Agriculture, of which he was president in 1915. His name, however, will be chiefly famous as that of a dendrologist. His connection with French missionaries such as the Fathers Delavay, David, Farges, and Soulie enabled him to introduce into Europe numerous plants, and in particular flowering shrubs, of which many were exhibited at the Quinquennial Floralies at Ghent in 1908 and 1913. We may instance, among his most remarkable introductions, Buddleia variabilis, Buxus Delavayi, Davidia involucrata, and Rosa Soulieana. He took over for his own use—particularly as regards the shrubs—the collections of Alphonse L. Lavallée at Segrez, which would otherwise have been dispersed, and created, in 1904 the well-known Fruticetum of Les Barres, near the celebrated Arboretum planted by his grandfather Philippe André de Vilmorin; in which he brought together the most important known collection of the flowering shrubs of temperate regions. The catalogue—*Enumeratio Vilmorinianum*—was published in 1904 with the aid of Monsieur Bois. Maurice de Vilmorin leaves two children. The eldest, Jacques de Vilmorin, is one of the present heads of the firm of Vilmorin, Andrieux et Cie.

GARDENING APPOINTMENTS.

Mr. **W. R. Wright**, for the past 2½ years Gardener to Major P. L. T. Hibbert, Ashby Saint Ledgers, near Rugby, Northamptonshire, as Gardener-Bailiff at the same place. [Thanks for 2s. for R.G.O.F. box. Eds.]

Mr. **Robert G. Martin**, for the past 9 years Gardener to Lord Wimborne, Ashby St. Ledgers, Rugby, as Outdoor Superintendent and Horticultural Instructor at the Horticultural College, Swanley, Kent.

THE WEATHER.

THE WEATHER IN SCOTLAND.

April was a bright, dry month, with an average mean temperature. Easterly winds prevailed during the month, chiefly from the north-east. Rain fell on ten days, five of which were "rain days," the total fall being 0.85 inch. The greatest fall on any one day was 0.26 inch on the 5th. Snow fell continuously for five hours on the 20th. Of sunshine 186 hours were recorded, being on average of 6.2 hours per day, and a percentage of 43.8; there were only three sunless days. With a mean of 30.152 inches, the barometer varied between a highest of 30.455 inches on the 23rd, and a lowest of 29.315 inches on the 1st. The mean temperature for the month was 45°; the mean range being 16°, and the absolute range 37°. The highest maximum of 62° was on the 27th, while the lowest minimum of 25° occurred on the 16th, while the lowest maximum of 42° and the highest minimum of 44° were on the 14th and 28th respectively. On four nights the thermometer fell below 32°. On the grass the mean minimum was 29°, with a lowest of 19° on the 16th. There were sixteen nights of ground frost. At 1 foot deep the soil temperature, with some fluctuations, rose from 45° to 47°. *James Malloch, Director of Studies, St. Andrews Provincial Training College Gardens, Kirkton of Mains, near Dundee.*

ANSWERS TO CORRESPONDENTS.

BEES: *Markets.* Place the sections in the hive when the bees are ready for them. When these sections are nearly filled with honey, put another crate underneath. You should use queen excluders, otherwise the brood will be raised in the sections.

FLUE DUST: *J. H.* Since the flue dust apparently contains a high percentage of potash, it will be especially valuable for Potatos, and can be spread over the ground at the rate of 3 or 4 ozs. to the square yard, as well as being dusted in the trenches when the sets are being planted. For mixing with potting compost, use a fair-sized flower-potful to a barrow-load of soil.

JAM: *Mrs. S.* Green Gooseberries make excellent jam, but naturally they require more sugar than ripe ones, and they are more likely to ferment. Jam is inclined to become mildewed on the top if it is kept in a damp place, and also if the cover was not sufficiently air-tight. The best way to cover jam is to pour hot mutton fat (or other fat) on the top when the jam is quite cold. This solidifies, and keeps the air out; the jars can then be tied down with paper or not, as preferred. In any case, ordinary paper is not airtight, and if that alone is used the jam is liable to become attacked by mildew.

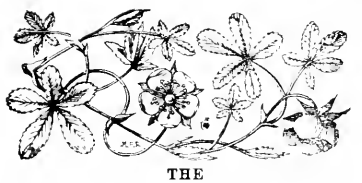
MARKET VEGETABLES: *H. R. W.* A bundle of Asparagus contains approximately 120 shoots. The number of roots in a bunch of vegetables are: Carrots, about 12; Horseradish, 12 to 18; Leeks, 6 to 12; Onions, 3 doz.; Radishes, 1 doz. to 2 doz.; Turnips, 1 doz. The ordinary size of a bunch of Mint or Thyme is a handful. A "strike" of Parsley is about 6 lbs. weight. A "tally" of Cabbages is 60 head.

MEALY BUG ON CACTUS: *J. H.* Mealy bug is a troublesome pest on Cactaceous plants, as it usually harbours in the clusters of spines. Syringing is very little use; the best way is to use a small, stiff brush, dipped in insecticide, and with this thoroughly clean the plants. Diluted petroleum is an effective insecticide.

NAMES OF PLANTS: *C. F. W.* 1, Dendrobium Ainsworthii splendidissimum (aureum × nobile); 2, Dendrobium Wigandianum (Hildebrandii × nobile).—*L. W. Y.* Viburnum Sandankwa, a Japanese species.—*T. L., Ireland.* Amelanchier canadensis.

SCALE ON PEACHES: *Miss P.* Thoroughly moisten the surface of the bark with a lather composed of soft-soap and water, and then scrape the surface with a blunt knife, or rub with a piece of coarse canvas, so as to clear off the scales without injuring the bark. Afterwards apply by means of a brush a mixture of 2 lbs. of soft-soap to 1 lb. of flowers of sulphur, thoroughly mixed with about 14 gallons of water; or, if you have not many trees, you can make a smaller quantity, but do not vary the proportions. You should do this at once, as the young insects creep out from under the dead scales in May, ready to begin a new attack.

Communications Received—H. B.—S. C.—W. B. & S.—C. D.—S. A.—A. W.—C. M.—V. A. & Co.—W. W.—J. S. L.—C. H.—G. N. C. H.—G. C. G.—H. J. E.—J. A. P.—J. S.



THE

Gardeners' Chronicle

No. 1638.—SATURDAY, MAY 18, 1918.

CONTENTS.

ILLUSTRATIONS.

NOTES FROM KEW.—V.*

THERE has been remarkably little advance in vegetation since my last notes appeared. The cold east winds, coupled with lack of sunshine, have retarded growth at a time of year when it is usually on the rush. However, it has been all for the best. Vegetation is quite forward enough, as there may be frosts before this month is out; the Potatos on the Palace lawn are above ground, and many other plants are uncovered to frost attack. The flower garden in front of the Palm House is planted with fifty thousand seedling Onions, and the flower-beds elsewhere are being sown or planted with other vegetables, including such out-of-the-way things as Sweet Maize, Ground Nut, Chinese Cabbage and Caraway. The last-named has been the subject of frequent inquiry at Kew. Oil of Caraway (Carum Carvi) is used in medicine and as a perfume for soaps; the popular liqueur Kummel is flavoured with it, and, as everyone knows, the seeds are used for flavouring cakes. The plant is as easy to grow as Parsley; it is, indeed, a Parsley in habit. Seeds nowadays are not to be had, unless one can find them in the spice-chest of a careful housewife, as Kew did, after trying Messrs. Vilmorin and other seed merchants unsuccessfully.

The garden attached to No. 1 Museum, formerly the residence of the Duke of Cambridge, is planted with a selection of drug and other plants of economic importance. Generally, each kind occupies a separate bed on the lawn, so that those interested may see what the plants are and obtain some idea of their cultural requirements. Here is a list of them:—Aconitum Napellus, Achillea Millifolium, Acorus Calamus, Agrimonia Eupatoria, Agropyron repens, Althaea officinalis, Anthemis vulgaris, Artemisia vulgaris, A. Abrotanum, A. Absinthium, Asperula odorata, Arctium Lappa, Atropa Belladonna, Calendula officinalis, Carum Carvi, Chelidonium majus, Chrysanthemum Parthenium, Colchicum autumnale, Convallaria majalis, Datura Stramonium, Daucus Carota, Digitalis purpurea, Foeniculum dulce, Gentiana lutea, Helleborus niger, Hydrastis canadensis, Hyoscyamus niger, Hyssopus officinalis, Lavandula officinalis, Lamium album, Leonurus Cardiaca, Linum usitatissimum, Marrubium vulgare, Mentha piperita, M. viridis, Melilotus officinalis, Melissa officinalis, Nepbrodium Filix-mas, Papaver Rhoeas, P. somniferum, Pimpinella anisum, Pyrethrum Parthenium, Pyrus Cydonia, Ranunculus Ficaria, Rheum officinale, Rosmarinus officinalis, Ruta graveolens, Spiraea Ulmaria, Stachys Betonica, Symphytum officinale, Tanacetum vulgare, Taraxacum officinale, Teucrium Chamaedrys, T. Scorodonia, Tussilago Farfara, Valeriana officinalis, and Verbena officinalis.

An Aristotelian garden this, with no interest whatever for the "decorative" gardener, who scoffs at beds of Dandelion and Tansy. All the same, it has a real value to those who desire to know the official plants. Modern gardening has gone too far in the direction of the merely ornamental. The beautiful wild Cherries, Pears, and Plums at Kew have few equals, but if one goes where fruit orchards abound one will see acres of such displays of flowers, and they will be succeeded by crops of fruit as pleasing to the eye as they are useful as food. If, instead of the Lime, Hawthorn, Laburnum, Lilac, Laurel, Aucuba, and the pestiferous Privet which fill so much space in the gardens of to-day, we had Apples, Pears, Plums, Cherries, Currants, Gooseberries, and some of the best Blackberries, our gardens would be none the less beautiful and the flowers would be followed by fruit which is good for man. Too much art, too little common sense, is a fair criticism of much of our gardening efforts. Of course, when a man owns sufficient land to be able to indulge in the merely beautiful as well as the really useful, he is lucky, but there are thousands who can only afford one phase of gardening, and it is unfortunate that they usually prefer the wrong one. It really is astonishing how rapturous we can grow over plants that are little better than weeds. The early English gardeners cultivated only plants that had a direct economic value, and we moderns might very well take that leaf out of their book. This is rank heresy, no doubt; still, it has to be said by someone, and I might as well say it.

There is no better hedge plant than Berberis stenophylla. At Kew this shrub is represented by large masses in prominent positions, but it is turned to useful purpose as a hedge enclosing the hardy aquatic garden, and a most perfect hedge it is. It can be sheared as Privet and Thorn are, and it quickly becomes a wall-like screen, pleasant to the eye at all times, a protection from cold winds, and in May it is a wall of golden flowers.

By far the best of the trees introduced in recent years from China is Davidia involucrata. Its praises have been sung by Henry, Wilson, and others, and to these may be added a strong recommendation from its behaviour in this country. The tree is quite hardy at Kew, never having suffered either from frost or from east wind in Spring from its first planting in the open some ten years ago. It grows as vigorously and is as shapely as a well-behaved young Pear tree, and it does not start into leaf too soon. The specimens planted out-of-doors at Kew are flowering well this year, and, judging by the tree in the Temperate House, when they are a year or two older they will bloom as freely as the wild Cherry. The tree in the Temperate House is probably the largest in this country. It was presented by M. Maurice de Vilmorin in 1901, and as soon as it was large enough it was planted in the Himalayan section of the house, where it grew well and flowered for the first time in 1913. It has flowered every year since, and at the present time there are more than a thousand fully expanded flower heads on it, a truly remarkable sight. Belonging to the Dogwoods, the pendulous flowers are in button-like heads, and set in a pair of white membranous, leaf-like bracts, the larger being about 6 inches long. These bracts have the effect of pieces of white paper hanging from the branches. Fruits are ripened every year, and some of last year's are hanging now. There were thousands of seedlings of this Davidia in Messrs. Veitch and Son's Coombe Wood nurseries a few years ago, and I suppose they were purchased by some enterprising nurseryman when the nursery stock was disposed of by auction.

I have never seen a Cornus at Kew so full of flowers as several young trees of C. Nuttallii near King William's Temple are now (see fig. 88). A visitor called them tree Clematis, and the white "flower," 4 inches across, with a black, button-like centre, certainly suggests a Clematis. In North America this and several other species of Cornus are very free flowering: evidently they like more sunshine than we get here. C. Nuttallii is said to be one of the most beautiful of the flowering trees of North America, and in autumn it is again effective owing to the yellow and scarlet tinting which the leaves assume.

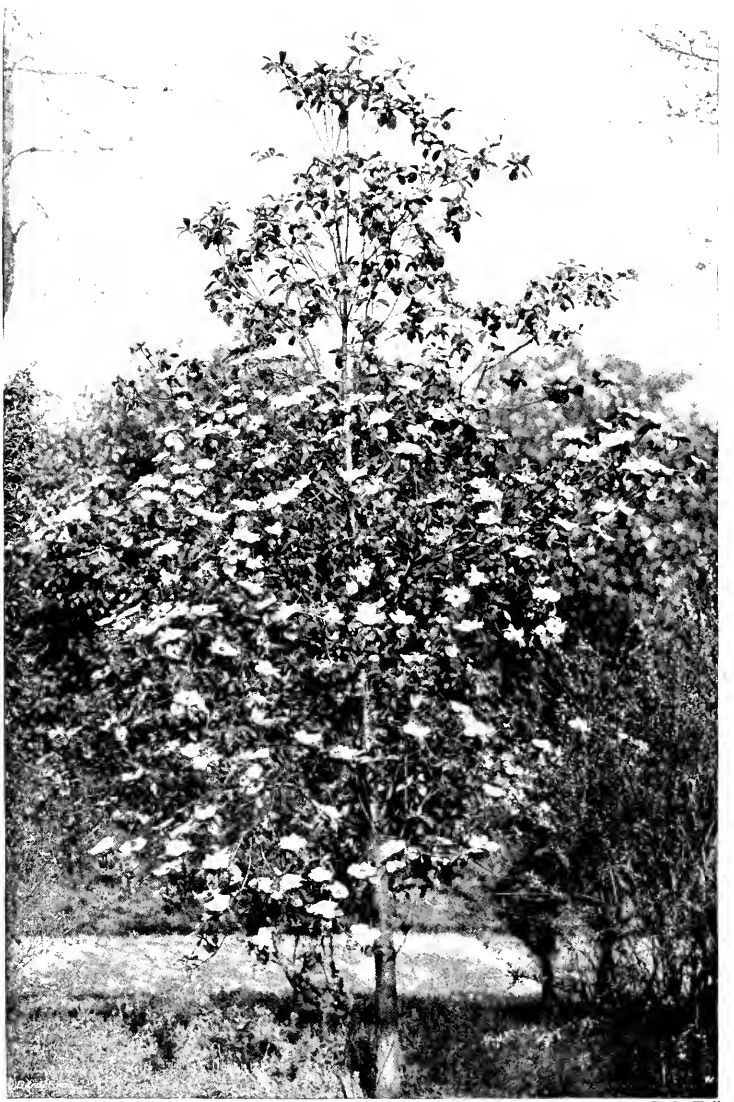
Amherstia nobilis, first flowered in England in 1849, by Mrs. Lawrence, the mother of the late Sir Trevor Lawrence, in her garden at Ealing Park, is represented by a large specimen in the Aroid House (No. 1) at Kew, which flowers regularly in May, and is in flower now. It is somewhat disappointing in this country, probably because it makes less show under artificial conditions than in the tropics of India and Malaya, where it is often cultivated in gardens, growing 40 feet or more high with a trunk 6 feet in girth. Dr. Wallich described it as being "profusely ornamented with pendulous racemes of large, vermilion-coloured blossoms,

* Previous articles appeared in the issues of January 19, February 9, March 9, and April 6.

forming superb objects, unequalled in the flora of the East Indies, and, I presume, not surpassed in magnificence and elegance in any part of the world." Given sufficient head room, say, a house 20ft high, it can be grown and flowered in a stove temperature such as suits its relations the Browneas and Jonesias. The tree produces long, leafy shoots every year, and the large, pendulous racemes hang among the big, pinnate leaves, the flowers dropping daily to the ground, for they are very fugitive. The blossoms are said to be used as offerings in the caves before the images of Buddha in Martaban.

In the Orchid houses the most noteworthy plants in flower are Lueddemannia Vyverensis, Schomburgkia tibicinis, and Epi rhyncostyloides. Other interesting plants in flower in the tropical houses are Puya coerulea, Til landsia Glaziovii, Nidularium Meyendorffii, Cereus flagelliformis, and Strelitzia Reginae. The seedling Victoria regia has just been planted in its big tank, where in about three months it will have leaves 6 feet across and flowers as big as Cabbages. I know no plant that increases so rapidly as this does; in about six months it produces scores of leaves which would together weigh about half a ton, and forty or fifty big flowers, not to mention the hundreds of grape-shot-like seeds which it ripens.

Standing over the Victoria tank is a good example of the Sealing wax Palm, Cyrtostachys Renda, which recalls its first appearance in Europe at a Ghent Quinquennial when I offered Mr. de Smet Duvivier 500 francs for a young plant which he showed there, and he refused the offer. Ah, me! Will there ever be such shows, such gatherings of plant fanciers from all parts of the world, such fraternising, and such trading as the mighty men of Ghent were used to organise every five years? Those gatherings were the Olympiads of horticulture. There, giant met giant; Sander v. Linden, Holford v. Vuylsteke, Wills v. Van Houtte, Vilmorin v. Krelage, and such-like leviathan contests. And what plants one saw at these shows! Shall we ever see their like again? Now, it is get on with the war; grow food; waste nothing. The world is struggling for freedom, and the art of gardening, like so much else that we valued, must drop its luxuries and help to provide food for the warriors. On the whole, we appear to be doing it fairly well. Nearly every man, and a large number of women, too, are actively engaged in their spare time in making the soil produce food. Many lessons are being learnt in the process, one of the most important of which is that vegetables are good for man. For food is a habit, a fashion, and we are apt to eat, and look upon as essentials, things that we could very well dispense with.



[Photograph by E. J. Wallis.

Fig. 88.—cornus nuttallii flowering at kew.

(See p. 203.)

Many Rhododendrons are in flower, both outside and under glass. In the Himalayan House, the most striking are The King and William Taylor, two hybrids raised at Kew; Loderi, white and rosy-mauve forms; Nuttallii, six flowers in a head; Griffithianum Rose Mangles, a lovely waxy flowered hybrid; and the true bright crimson arboreum. Outside, a bed of Vaseyi is a great attraction, and campylocarpum proclaims itself the best of all yellow Rhododendrons.

The rockery is coming on, although, as one soldier recently remarked to another, it will be better when the plants have covered all the soil and the stones! They might, if the weather were more propitious. Daphne petraea is one of the gems, a nice little colony of it being quite happy in the Saxifraga section. The best Primulas are chionantha and davurica, and Trillium grandiflorum is a king among its less showy brethren, cernuum, sessile, and erectum. Meconopsis is at present represented by three species, simplicifolia, grandis, and aculeata, and there are others coming on. The Bluebells are in flower, and so are the Lilacs and Azaleas. As a modern poet has sung, you should "Go down to Kew in Lilac time, it isn't far from London." W. W.

LEAF-MOULD BENEATH TREES.

It cannot be contended that the accumulation of leaves beneath trees may be removed with advantage. The leaf-mould serves a two-fold purpose—that of manuring and of mulching, and perhaps the latter, by which the moisture is conserved and the trees whose roots are comparatively near the surface, is the more important, for the trees with their blanket of leaf-mould are thus enabled better to withstand periods of summer drought. Nor should the winter value of the mulch be overlooked, for even during the hardest spell of frost the layer of partially-decayed leaves protects the ground below. As an illustration of the great value to trees of the fallen leaves, I have in mind a large Beech wood conveniently near to a country garden. Every winter, for very many years, hundreds of cartloads of leaves were removed from a portion of the wood and taken to the garden for making hot-beds, and, later, to be used as manure in the kitchen garden. From the gardener's point of view this was an admirable arrangement. But the most casual observer could not fail to note the difference in the condition of the trees in the Beech wood. One could see to almost a yard how far the leaf-raking had extended. Beyond, where nature's plan of manuring and mulching had never been interfered with, the trees, of the same age and in similar soil, were in marked contrast. Although most had become "stag headed" with

age, they were taller, larger in the bole, and the leaves retained their greenness longer in the season than those that had been denuded of their natural mulch.

The value of the annual fall from broad-leaved trees is so well recognised by foresters that mixed plantations of broad-leaved trees and Conifers are frequently made. In the arboretum a periodic top-dressing is a regular routine. At Dropmore the late Philip Frost carried out much of this admirable work. Profiting by this example I treated many of the specimens at Pencarrow with road scrapings and other material, though in North Cornwall the annual rainfall is much heavier. The good effect was soon seen, particularly in the case of an avenue of Araucaria imbricata on high, poor ground, where the trees had practically stood still for a dozen years, yet in three years after a liberal top-dressing they renewed their vigour and grew with remarkable freedom. *A. C. Bartlett.*

PLANT NOTES.

PAEONIA CAMBESSEDESII.

A LADY residing in Ireland, whose name and address I have unluckily mislaid, sent me last autumn two plants under the above name. The plants have done very well, having come through the winter unprotected in the open border without harm, and are now in flower. This Paeony, which is not in the *Kew List*, is a very beautiful plant, and I should be glad to know its country of origin. It is about one foot high, the leaves alternate, on red footstalks, ternate, the leaflets lanceolate, 2½ to 3 inches long, the upper surface bronze green, shining as if burnished, the under surface and veins rich red. The flowers are cup-shaped, calyx ruddy-bronze, corolla clear light rose, enclosing crowded anthers of lemon-yellow, from which project the vivid crimson carpels. The blossom has a fruit-like odour, something between an Apple and a Plum. I am extremely grateful for so desirable an addition to our collection. *Herbert Maxwell, Monreith.*

[In *Index Kewensis* Paeonia Cambessedesii is given as a synonym of P. corallina.—EDS.]

CAMPANULA KEWENSIS.

THE charming little hybrid Campanula illustrated in fig. 89 originated in the rock garden at Kew in close proximity to its parents C. excisa and C. arvatica. The plant is intermediate in character, having the habit of the former, and bearing the open flowers of the latter parent. The wiry, branching stems are about 4 inches high, bear narrow, sparsely toothed leaves, and produce single flowers on terminal branches. The blooms are rather deeper in colour than those of C. arvatica. C. kewensis grows well in a moraine-like pocket, spreading, similar to its parents, by means of underground runners. The plant first flowered in June, 1916. *W. J.*

NOTICES OF BOOKS.

THE FLORA OF LORD HOWE ISLAND.*

LORD HOWE ISLAND is one of the many remote insular gems of the Southern Hemisphere clothed with a varied and beautiful vegetation. It is a mere speck in the ocean, estimated at five square miles in area, and it lies about 300 miles off the eastern coast of Australia in 31° 33′ S. latitude. The surface consists of three volcanic mountains, connected by flat ground, and rising to nearly 3,000 feet, with perpendicular cliffs on the seaside. The climate is equable, and warm-temperate, with an annual rainfall of about 50 inches, spread over the whole year, but most copious in summer.

The literature dealing with the flora dates from 1853, and includes a synopsis by the writer of the present work (*Transactions of the New Zealand Institute*, vol. xxix., 1896). This has been supplemented by J. H. Maiden and W. W. Watts. Mr. Oliver's work is more comprehensive, especially concerning the vegetation, the result of personal observation and investigation. He figures the anatomical structure of the leaves of the leading forest trees and classifies the plant formations; but what appeals more to the distant naturalist is his illustrations of the scenery embodying the prominent features in the vegetation of lowland and mountain. The pictures show the interior of lowland forest; the Great Banyan, Ficus columnaris; Moss Forest, on summit of Mount Gower; Howea Belmoreana in forest; Hedyscepe canterburyana, Howea Forsteriana, and Clinostigma Moorianum. All four of these Palms are more generally known in horticulture under the name of Kentia, and two of them, at least, are among the most popular and useful Palms for indoor and conservatory decoration. Mr Oliver classifies the woody vegetation of the island as follows:—

I. Forest. From sea-level to 600 metres. Climatic conditions normal. Trees 8–20 metres tall. Palms, Pandani, Tree-ferns. Lowland high forest Ficus columnaris, Howea Forsteriana. Upland high forest—Acialyptus Fullagari, Howea Belmoreana. Lowland low forest Hemicyclia australasica, Howea Forsteriana. Mountain low forest—Notelaea quadristaminea, Hedyscepe canterburyana, Pandanus Forsteri.

II. Moss forest. Mountain summit above 600 metres. Constant wind, with frequent rain and fog. Shrubs, Palms and Tree-ferns, 3—4 metres tall, with dense undergrowth of shrubs and ferns. Epiphytes abundant; ferns, mosses, and lichens. Dracophyllum Fitzgeraldii, Clinostigma Moorianum, Cyathea brevipinna.

III. Scrub. Edge of forest along sea coast and on exposed ridges. Constant wind bearing salt spray along the coast. Shrubs 1–2 metres tall; few trailing and herbaceous plants. Coastal scrub Ochrosia elliptica, Lagunaria Patersonii, Myoporum insulare, Melaleuca ericifolia, Cassinia tenuifolia. Hill scrub Dodonaea viscosa, Hemicyclia australasica, Raponea platystigma.

The marine formations offer no striking features, Avicennia officinalis and Aegiceras corniculatum constituting the Mangrove element; whilst Salicornia australis is represented by a few patches. Full details of the composition of the vegetation of the various formations are given by the author. Of the 169 genera of vascular plants represented in the island, four are endemic, namely: Hedyscepe and Howea (Palmae), Negria (Cyrtandreae), and Colmeroa (Saxifragaceae). Out of a total of 209 species recorded by Oliver, 70 are endemic. Ferns number 45 species, belonging to 25 genera, representing the principal types of the Filicales, and including four endemic Tree-ferns and no fewer than seven species of the Hymenophylleae. Petaloid monocots are rare, but there are five Orchids belonging to four genera. The endemic Moraea Robinsoniana "occurs from sea-level to the summit of Mount Gower, in scrub on cliffs and in rocky places; always in exposed places." Taken as a whole, Mr. Oliver's account of the flora of the remote Howe Island is a most instructive contribution to the subject of insular floras. *W. Botting Hemsley, Henfield.*

* "The Flora and Vegetation of Lord Howe Island." By W. R. B. Oliver. From *Transactions of the New Zealand Institute* Vol. XLIX., 1916, pp. 94-161, plates x.-xvi., with a few anatomical figures in the text. Issued July 6, 1917. Wellington, N.Z.: Marcus F. Marks, Government Printer.)

FIG. 89.—CAMPANULA KEWENSIS. FLOWERS PURPLISH-BLUE.

HARDY FLOWER BORDER.

VESICARIA UTRICULATA.

VESICARIA UTRICULATA, the Bladder Pod, is a desirable plant for the flower border or large rock garden. In the colour of the flowers and the general appearance it is like the golden Wallflower, but is a distinct and pleasing plant. It grows about one foot or 18 inches high, has narrow leaves and arching stems surmounted by clusters of golden Wallflower-like blooms. In the rock garden it should be planted in full exposure to the sun, and it succeeds well in a dry soil. An interesting feature of this Vesicaria is revealed after the flowers wither, for the seeds are enclosed in a small, bladder-like pod, hence the name of "Bladder Pod." The species is figured in Silithorpe and Smith's *Flora Graeca*, t. 627. Although the plant is a hardy perennial, occasional renewal of the stock from seeds or cuttings is desirable. Seedlings raised from seed sown not later than June bloom the following year. Self-sown seedlings occasionally appear near established plants. *S. Arnott.*

WART DISEASE.

THE issue of a new Wart Disease Order marks another stage in the control of a disease which threatened at one time to ruin the Potato industry in this country. Before the war it had stopped the bulk of our export trade, and every foreign Government hastened to prohibit or hinder the import of Potatos which might be affected with Wart Disease or "Black Scab," as it was commonly called. The disease makes its appearance mainly in the tubers. A tuber attacked by the disease is illustrated in fig. 90; but the stems, leaves, and even the flower may be attacked if the fungus can obtain an entrance when the part lies on the soil.

As a result of the discovery of immune varieties and the failure of remedies—whether chemical or mechanical—together with the fact that the spores lie in the soil for at least nine or ten years, the Board of Agriculture resolved to endeavour to control the spread of the disease by a system of licensing resistant varieties: they have scheduled all places known to be infected, and allowed only such varieties to be planted there. This system worked well enough for a limited number of cases, but now that the known cases run into thousands, and cover a very large acreage, they have decided to deal with the cases on a simpler basis.

The new Order, which comes into force on June 1, makes it illegal to plant any but approved immune varieties in an infected area. This area may be of any size, and the term may cover private garden, borough, parish, or even a county. All infected premises and areas already declared are included, and fresh areas will be certified from time to time. At the rate the disease is spreading—owing to the scarcity of "seed" and consequent use as "seed" of anything in the shape of a Potato, it made rapid strides last year—the pest will soon be prevalent all over the country, and ordinary varieties of Potato, which are largely susceptible, may soon disappear from cultivation. The disease has been known in out-of-the-way places for some forty years, and probably longer.

It is commonly stated that it is only a pest of cottage gardens and allotments, but infected fields are common in Lancashire, Cheshire, Shropshire, Staffordshire, and elsewhere. At present little is known of its presence in the East and South, but each year fresh cases are reported in these districts, and, as few of the Potato growing areas of the North are free, it is only a question of time before the whole country is infected.

Another section of the Order will affect all growers of the approved immune varieties if they sell "seed," even to a neighbour, as no one is allowed to sell such Potatos for planting except to a dealer in seed Potatos, unless he is authorised to do so by a licence granted by the Board. The object of this clause is that such Potatos may be inspected as being true to name and free from rogues, and thus the further spread of disease owing to an intermixture of varieties or wrong naming may be prevented.

The question of the supply of immune "seed" is receiving attention, and sufficient quantities will doubtless be available next spring. The number of these varieties now totals over sixty, many of them being good croppers and of excellent quality. Some, for example, Great Scot, King George, Lochar, Abundance, Langworthy, and Golden Wonder are well known, and others, such as Rector, Majestic, and Dominion have a future before them. Unfortunately, very few first earlies are immune, and these not the best sorts. It is of the utmost importance that good varieties should be available, and many raisers are engaged on this work; several promising varieties have been tested at Ormskirk, and have come through their first season satisfactorily.

Much work of a more scientific nature remains to be done, and no one has yet solved the mystery of one variety being immune, while another, to all intents and purposes similar, is very susceptible to the disease. There is no common characteristic amongst the varieties which so far has yielded any clue. Many of the immune sorts have white flesh and white flowers, but others have yellow flesh and coloured flowers. The haulms differ in growth and habit as much as susceptible varieties do. It is not a question, as some people think, of the varieties having stamina owing to fresh crosses, as many new seedlings are badly attacked, while old varieties, like Abundance and Schoolmaster, still resist, although, in growers' estimation, they have "run out." Up to the present, no variety once established as "immune" has broken down. From time to time Great Scot is reported as having the disease, but investigation shows that it is rogues, usually Arran Chief, which are affected. Snowdrop had to be withdrawn from the Board's list, as it so often yielded diseased plants, but this has been proved to be due to an admixture of a yellow fleshed

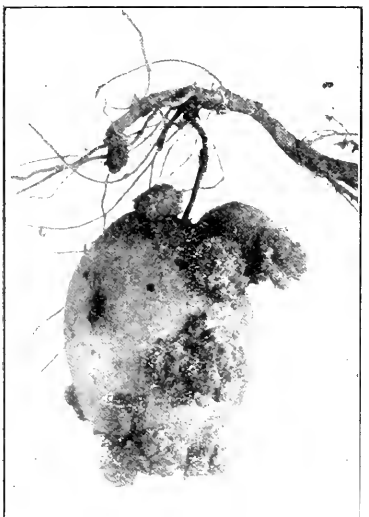


FIG. 90.—POTATO TUBER AFFECTED WITH WART DISEASE.

variety, probably Duke of York, with most of the stocks. Both in this and also in Witch Hill, if sets are cut and yellow-flesh tubers are discarded, the resulting plants from white-flesh sets are free from disease. The immunity is probably due to some chemical action of the sap, or possibly to something in the nature of a toxin. Another point to be cleared up is the condition of the sporangia which remain so long in the soil. Do they remain merely as sporangia and only germinate when acted on by some secretion from the Potato? Do immunes fail to yield such a secretion? Or do they germinate as some spores do and encyst again later if they fail to find a host? These and many other questions can only be cleared up by careful research, preferably by a bio-chemist in conjunction with a botanist, assisted by the Board's outdoor officers, who have been engaged in the work for some time. These would approach the question from different standpoints, and would endeavour to work out the complete life history of Synchitrium endobioticum, as the causal fungus is called, in the hope that some weak point in the life history may be found and the disease stamped out. *G. C. Gough.*

The Week's Work.

THE KITCHEN GARDEN.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey

CELERY.—If the trenches for Celery are not already prepared they should be dug forthwith, then, when the plants are sufficiently hardened they may be at once transferred to their final quarters. Prepare shallow trenches 15 inches wide and one foot deep for early rows, using a liberal amount of rotten manure in the trench after first forking up the bottom soil. Cover the manure with a layer about 4 inches deep of soil and allow it to settle for a few days before planting. Do not allow the plants to remain in the boxes in which they were transplanted too long, or they will become stunted and yellow. Plant firmly and carefully, using a trowel, as the roots are easily damaged. Water the plants copiously immediately after planting them, and shade them from bright sunshine for a few days. Allow a space of 3 feet between single early rows and 4 feet 6 inches between double rows, increasing the width of the trench in the latter case to 2 feet. On well drained soils it is almost impossible to over-water Celery. Lightly dust the plants with soot once or twice a week, especially where Celery fly is troublesome, and feed the roots freely with diluted liquid manure as the plants advance in growth.

LETTUCE.—Great care and attention is necessary to maintain a regular supply of Lettuces. Small sowings of both the Cabbage and Cos kinds should be made every week or ten days. During the summer no place is better for growing good Lettuces than on the ridges of Celery trenches. Cos Lettuce is generally more in demand than the Cabbage kind, and two rows can be planted on top of each ridge at one foot apart each way. Water the plants copiously after planting, and keep a sharp watch for slugs, especially during showery weather.

PEAS.—Make further sowing of Peas of such varieties as Duke of Albany and Alderman, following with those recommended in the calendar of March 29. Sow the seed thinly, and allow plenty of room between the rows, for with abundant space the plants give more pods and better Peas. Early plants which are coming into flower, and those of mid-season varieties, must never be allowed to get dry at the roots.

TOMATOS.—Plants intended for cropping in the open must not become pot-bound or suffer a check from any other cause. If protection can be given, plants intended for growing against warm walls may be planted out from this date onward. Pot on later plants if necessary, and give them such treatment as will make them sturdy. Let them be well hardened in readiness for planting out in the open quarters the first week in June.

CABBAGES.—Continue the planting of early varieties of Cabbage. Plant closely in the rows, and do not allow more than 18 inches between the rows, as moderate-sized heads are the most serviceable. Economy of space should always be considered without unduly crowding the plants. Do not allow ground to be vacant many days without cropping it afresh.

PLANTS UNDER GLASS.

By E. HARRISS, Gardener to Lady WANTAGE, Lockinge Park, Berkshire.

CARNATIONS.—Some of the old Carnation plants should be removed from the flowering house to make room for those which have been propagated this season. These old plants will produce plenty of flowers for some time to come if their requirements are regularly attended to. They may either be placed closely together in a cool house or plunged out-of-doors at the foot of a south wall. Keep them liberally supplied with water, and use stimulants two or three times a week. Grow the young plants in a position near to the roof-glass, and let them have plenty of room. The earliest-rooted plants are

ready for their final shift into pots 7 inches in diameter. A compost consisting of good fibrous loam, crushed brick rubble, wood-ash, crushed bones, and sharp sand, forms a suitable rooting medium for Carnations. The soil should be mixed several days before it is required for use. Pot firmly. Souvenir de la Malmaison Carnations need watering and feeding more liberally, as the flower-spikes are developing. Remove all side buds and place a neat stake to each growth. If it is desired to hasten some of the plants into flower, a few may be placed in a warm house.

ROSE FORTUNE'S YELLOW.—It would be difficult to find a more useful or beautiful Rose for growing in a cool, lofty structure than Fortune's Yellow. When once established its cultural requirements are of the simplest. Our latest plants have just passed out of flower, and all the old flowering wood has been cut hard back. They are already sending out strong young shoots. These will be thinned out and trained over wires about 15 inches apart. During the growing season the roots are liberally watered with diluted farmyard drainings, and, in addition to this, the rooting area is covered with 2 or 3 inches of well-decomposed horse or cow manure. During the winter water must be given sparingly, but the roots must not be allowed to become excessively dry.

GREENHOUSE CLIMBERS.—Careful attention must be paid to the thinning and training of the young growths of climbers. Some of the more vigorous subjects may require somewhat severe treatment in this respect, or they will smother their weaker growing neighbours. Plants growing in restricted borders need copious supplies of water while in active growth, and this must be supplemented occasionally by some form of stimulant. Keep a careful look-out for aphis, and fumigate the house as soon as this pest is perceived.

THE FLOWER GARDEN

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

BULBOUS PLANTS.—Muscari Botryoides, Scilla præcox and varieties; S. italica, Crocuses, Snowdrops, Chionodoxas, Erythroniums, and Winter Aconite are all common but beautiful bulbous plants that may be transplanted now without doing much harm to the plants. They are all beautiful objects in grassland, and require no other encouragement to grow than just to notch places in the turf with a spade, insert the bulbs, keeping the foliage intact, and then leave them to themselves.

WILD ORCHISES.—Orchis mascula is at present in flower, and where it is to be found growing wild it is worth while going with trowel and basket on an excursion to secure a supply of the finest forms. The plant grows best in a heavy loam, and by careful lifting nearly the whole of the roots may be secured, together with enough of its native soil to enable them to grow without a serious check. Once established in a shaded part of the rockery I find that this Orchid increases from self-sown seeds. There are some pretty wild forms, and apart from their beauty the plant has a sentimental interest from its being the "Dead Man's Fingers," and possessing other common names, almost all forgotten now.

TRANSPLANTING SHRUBS.—Certain shrubs and trees succeed better planted at this time than at any other season of the year. Such are Hollies, Yews, and Evergreen Oaks. To have perfect success they must be caught just before the buds begin to break, and, in addition, large plants should have been prepared for lifting by root-pruning them previously. The time for transplanting must obviously vary to some extent, according to the locality. Should the soil be dry it will repay the labour to water the plants a short time before removal, and the work should always be done in dull weather. The hole for the reception of the ball of roots and earth should be fairly large, and firm soil compression is most important. Very large specimens require three stakes driven in at equal distances outside the ball and meeting together at the plant, each forming a sharp angle. For smaller plants one stake is sufficient driven in, in a similar manner, in the part opposite that from which the highest winds prevail. Last year about this time I transplanted some moderately large shrubs and Conifers with very little soil attached to the roots. The plants were profusely watered and dry soil added as a mulch; every one succeeded, even a common Oak.

THE ORCHID HOUSES.

By J. COLLIER, Gardener to Sir JEREMIAH COLMAN Bart., Gatton Park, Reigate.

DENDROBIUM PHALÆNOPSIS SCHROEDERIANUM.—Plants of this Orchid and its varieties are developing new growths, and any requiring fresh rooting materials should receive attention in this respect as soon as roots appear at their base. The plants will grow equally well either suspended from the roof-rafters or on the stage. An important detail in their cultivation is to place them near the roof-glass, in order that they may obtain all the light available. If it is intended to suspend the plants they should be grown in shallow pans furnished with wire handles. Plants that are to be grown on the stage are best grown in pots. It is not advisable to repot plants that were potted last season. The receptacles for any that are repotted should not be larger than is necessary to just hold them, as the plants do not require too much rooting space. In repotting, about half fill the pots with clean crocks for drainage, and arrange the plant so that the growth is level with the rim of the pot; make it secure by tying the pseudo-bulbs to a neat stick. Specimens grown in pans should be secured to the wire handles. Water the plants carefully until the young roots have made satisfactory growth, when moisture should be afforded liberally. During its season of active growth this Orchid requires a considerable amount of heat and atmospheric moisture, and should be shaded from bright sunlight for a few hours during the middle of the day. Dendrobium bigibbum and D. superbiens are closely allied species, and require similar treatment.

CHYSIS.—Chysis bractescens, C. aurea, C. Sedenii, C. Limminghii and others may require repotting after they have passed out of flower. They are best grown in suspended shallow pans. Those that have sufficient pot-room for another season's growth need not be disturbed if the soil is in good condition. Those of which the soil is sour, or that require more root-space, should be repotted. Ample drainage should be provided; a suitable rooting medium is three parts Osmunda fibre or A1 fibre one part Sphagnum moss (both chopped rather short), and a liberal sprinkling of crushed crocks. Mix the materials well together. Pot firmly, and keep the base of the plants a little below the rim of the pan. The plants should be suspended from the roof-rafters in the lightest position in the intermediate house, and should be sprayed frequently, wetting the undersides as well as the upper surfaces of the leaves in order to prevent attacks of red spider and yellow thrips.

THE HARDY FRUIT GARDEN

By JAS. HUDSON, Head Gardener at Gunnersbury House, Acton, W.

ALPINE STRAWBERRIES.—Young plants of Alpine Strawberries that were raised from seed sown last season have made good progress. They are showing their first flower-spikes, and as this batch will be wanted to supply ripe fruit in late August and September, these early flower trusses should be picked off, and it will be necessary to continue to remove the blossoms until after the first week of July. The ground between the plants should be kept well stirred, and no runners allowed to grow. If hoeing be persisted in the plants should not stand in need of water if the weather sets in dry. I have not, so far, been able to secure my usual packets of seed for sowing this spring. As this seed is generally saved on the Continent, the explanation is not far to seek. I hope, however, soon to receive it, and no time then will be lost in sowing it. As a safeguard, however, I propose to take runners from last year's seedling plants. These will be pricked off in frames at once, and treated like young Celery plants. The plants forming the beds that are intended for the first crop are showing well for flower, and promise to give ripe fruit by the last week in June. Our beds have not received the usual looking this season, but as they were well cared for last year no harm should accrue, although we shall have to be careful where we step when picking the fruit, as the ground is a mass of runners. The beds should receive a dusting with lime to deter slugs.

PERPETUAL STRAWBERRIES.—I have previously advised the making of new plantations of perpetual fruiting Strawberries in the early spring rather than the late summer. The plants should now be growing freely; remove any adventitious spikes as soon as they show. If a few runners appear fairly early let these be pegged down in the rows; one at least may be so treated between each crown, or crowns, if these were planted as triplets. Keep the ground between the rows well stirred at all times.

CURRANTS AND OTHER BUSH FRUITS.—There may not be much possibility of insect pests attacking bush fruits just yet, but one never can be quite certain when an attack will begin. On both Red and White Currants, as well as Gooseberries, caterpillars may soon be expected to cause damage. The pests should always be combatted early, and a weak insecticide is usually sufficient to destroy them. For big bud in Black Currants some growers advise a stronger specific at this season of the year. Keep a sharp watch if there be any suspicion of Gooseberry mildew, and endeavour to stamp out the disease as soon as possible. I have not had to deal with this pest, but if I did I should at once use lime-sulphur spray.

FRUITS UNDER GLASS.

By W. J. GUISE, Gardener to Mrs DEMPSTER, Keele Hall, Newcastle, Staffordshire.

LATE VINES.—Tie in the young growths of late Vines carefully and gradually, or they will break away at the base, especially in the case of strong growing varieties of the Black Alicante type. Keep insect pests in check by damping the paths and borders; this should provide sufficient moisture to maintain healthy growth without much syringing. A little extra warmth in the hot water pipes may be needed if cold, dull weather prevails. When the Vines are in flower, keep the atmosphere dry, and allow a little air to enter by the top ventilators at night, to prevent accumulations of moisture and to assist the setting of the fruits. Thin the bunches in the early stages, and select the best placed medium sized bunches for the crop. Let the night temperature for Black Alicante be 65°, and for Muscats 5° higher.

UNHEATED VINERIES.—The scarcity of labour and the difficulty of obtaining fuel will no doubt compel some growers this year to dispense with fire-heat, and rely on sun-heat. Some years ago I had an unheated vinery under my charge on the West Coast, planted with Foster's Seedling, Buckland's Sweetwater, and Black Hamburgh Grapes. The Vines produced excellent crops and finished well. Syringing was entirely dispensed with, sufficient moisture being created by damping the paths and bare spaces. When growth was active the house was ventilated early to prevent scalding, a very necessary precaution when the foliage is wet with condensed moisture. The house was damped and closed early in the afternoon to conserve the sun-heat. Disbudding, pinching the shoots, tying the laterals, thinning, mulching, and feeding were carried out exactly the same as in the heated structures. In some unheated vineries mildew is likely to make its appearance, and must be checked in the early stages, for the fungus spreads rapidly, and may easily ruin the crop.

YOUNG VINES.—Vines struck from eyes early in the year should now be quite ready for shifting into larger pots. These young Vines may be planted out in prepared borders with excellent results. Care must be taken not to injure the young, fibrous roots, and a thin shading over the glass is advisable until the plants are established. The syringe should be used on fine mornings, and again when the house is closed, to ensure sufficient atmospheric moisture. The laterals should be closely pinched, and the leaders stopped when they have made 5 or 6 feet of growth.

EDITORIAL NOTICE.

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

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

Special Notice to Correspondents.—*The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.*

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

Letters for Publication, *as well as specimens of plants for naming, should be addressed to the* **EDITORS, 41, Wellington Street, Covent Garden, London.** *Communications should be* WRITTEN ON ONE SIDE ONLY OF THE PAPER, *sent as early in the week as possible, and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.*

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

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 54.2.

ACTUAL TEMPERATURE:—*Gardeners' Chronicle* Office, 41, Wellington Street, Covent Garden, London, *Thursday*, May 16, 10 a.m. Rain .29.9; temp. 72°. Weather Sunshine.

Firewood and Faggots in War Time.

The present high price of coke and coal has had a marked effect on the consumption of firewood. As to which kind of timber is the best for use as firewood there is a great diversity of opinion, but probably in nine cases out of ten, Oak, Ash, and Beech, among our commonly cultivated trees, would be placed near the top of the list. The age and quality have a great deal to do with the heating properties of any wood, such as is old and thoroughly matured having greater lasting and heating properties than young, sappy timber. Slow-grown wood is preferable to that of rapid growth. Decayed or decaying timber makes poor firewood, as also does such as contains a quantity of sapwood. Some woods, such as the Ash and Plane, burn well in a green state; others must be seasoned or dry before use.

Irrespective altogether of the price or the quantities in which they can be procured, the timbers of some of the rarer trees not only burn most freely, but give out the greatest heat. Yew, when properly seasoned, approaches more nearly to coal than any other home-grown wood, both for heat-giving and lasting properties. It burns slowly, gives out a fierce heat, throws out no sparks, and is comparatively clean. Yew-wood should be felled for at least two years before it is used for firewood. The use of Hawthorn as firewood is proverbial, and in conjunction with Apple and Pear wood is greatly valued. It burns very slowly and almost without smoke, producing a great amount of heat. Hazelwood burns well, and is highly prized where it can be obtained in plenty.

Taking all in all, we are, however, inclined to place the Beech in the front rank as firewood. It is hard and lasting, gives out an even heat, and has the additional recommendation of being readily procured at a moderate price and easily split into logs. Oak, where it can be cut from seasoned timber, is hard to beat, though the smoke is bad for the throat. When the draught is perfect and the smoke finds its exit by the chimney there is little to complain of in Oak as firewood.

Ash is a very quick burner, even when green; and Elm, though a "dour" burner, is very lasting, and when thoroughly alight makes a pleasant fire. Few home-grown timbers, however, burn so brightly as winter-felled and partially seasoned Plane; indeed, for a lively fire that of the Eastern Plane has perhaps no equal, but it is a scarce wood in England. Pine wood makes a quick fire on account of the resin it contains, but the sparking is dangerous. Scots Fir, when old and resin-stained, makes a most desirable fire on a winter's night, and blazes with a glowing cheerfulness that finds a match in no other home-grown timber. Wood obtained from the Irish peat bogs is valuable, and sells at a high price. When used as firewood, the timber of Lawson's Cypress gives off a delicious fragrance, and is highly valued on that account. Chestnut is not a desirable firewood; indeed, as a fire resister it has no equal in the category of native woods. Birch burns quickly without giving much heat. Willow is to be recommended, but Poplar is somewhat objectionable. The addition of a few pieces of coal to a fire of such timbers as the Elm, Sycamore and Poplar, and, in fact, all timbers when in a green state, greatly improves their burning properties. Cedar wood burns with a pleasant fragrance, but is dangerous owing to its sparks.

The treatment of firewood rarely receives proper attention. It should be carefully stacked and protected from the weather for at least a year. Any cost that this may entail will be amply repaid by the increased value of the fuel. If a suitable building is not at hand, the wood stack should be thatched either with reeds or Birch branches; and the same applies to faggots, both large and small. Faggots are as easily built into a stack as sheaves of corn, whilst firewood cut into 3-feet lengths occasions little trouble in building into a neat pile for seasoning. The age and dryness of wood has much to do with its burning properties, and timber that has become rotten by undue exposure in damp situations makes poor firewood.

In Kent and around London generally firewood is usually stacked and sold by the cord, which measures, according to local custom, 14 feet long, 3 feet broad, and 3 feet high, or 8 feet long, 4 feet broad, and 4 feet high. A cord of wood, about 2 tons in weight, will make 1,000 billets of firewood size. The price of a cord of firewood varies greatly with the district, accessibility, quality and demand, and has gone up fully 25 per cent. during the past two years. On an estate in Kent, twelve miles from London, the selling price before the war was 10s. per cord, but it is now 15s., and even at this figure the demand is greater than the supply. About 5s. per cartload is the usual price for rough firewood.

Large faggots for kiln and other purposes, 3 feet long and 24 inches in circumference when bound up, vary from 10s. to 15s. per 100, and small faggots, called "pimps" in the counties bordering London, which a year ago could be bought at 3s. 6d. per 100, now fetch 4s. 6d. and upwards. Before the war, owing to the making of faggots by pauper labour out of cheap foreign batten ends, home-made faggots for fire-lighting had decreased considerably in value.

That a very considerable quantity of the produce of our land woods, in the shape of rough trees and branches, is annually consumed for fire-lighting and fuel is not sufficiently recognised except by those who are directly connected with the trade. Returns to hand from the London firewood dealers alone show that the quantity is much greater than would be supposed, and the normal trade has been much increased by the exigencies of the war. Vast quantities of firewood are being sent to France and Flanders, in addition to charcoal and fire-lighters, with the result that there is a dearth of all these fuels at home. In many of the suburbs of London, indeed, it is impossible to purchase firewood of any kind, and much inconvenience is the result, especially as the many forms of fire-lighters are becoming more and more rare.

In ordinary times faggots and firewood are sent to the London market ready for use, the latter being bound up in bundles of the required size and the former cut into billets ready for the fire. Large faggots, or "bavins," as they are called in Kent, have also a ready market, and are used for kiln purposes.

ROYAL HORTICULTURAL SOCIETY.—The next meeting of the Fellows of the Royal Horticultural Society will be held on the 28th inst. in the Drill Hall, Buckingham Gate, Westminster.

BIRMINGHAM ALLOTMENTS.—A memorandum issued by the Chief Officer of the Birmingham Parks (Mr. W. H. MORTER), contains particulars of the allotment movement in that city, and of the success which has attended the efforts of the municipality to increase the food supply. Immediately after the Government had issued the first Cultivation of Lands Order in December, 1916, the Council made over their powers and the work of administration to the Parks Committee. This Committee set about finding suitable land, but it was not until the issue of the new Order, in February, 1917, that matters progressed quite satisfactorily. High rents had at first frequently been asked, and the new Order (containing the provision that no higher rents should be paid than were previously obtainable for the land) gave the municipality exactly the power it needed. The ground obtained was divided into thirty areas, and an instructor appointed for each. In the early months of 1917 the demand for plots was overwhelming. It had been expected that the provision of about two thousand plots would meet the demand, and all the land taken early in 1917 was laid out in 400-yard plots. In the four months from January to April some 650 acres of land had been procured, and 6,250 plots of 400 yards each let to applicants at 10s. per plot. Arrangements were made with the leading seedsmen of

the city for the supply of seeds at a reduced rate to the allotment holders, and with ironmongers for the provision of tools. Spraying machines were purchased by the Parks Committee, together with the necessary materials; the materials were sold to applicants at cost price, and the machines let on hire for a nominal sum. The financial details of the scheme are as follows:—

Rents received from 6,289 plot holders, £3,118 17s. 3d. Approximate expenditure for the year:—Salaries and wages, £752 12s. 3d.; rent, rates and taxes, £1,451 4s.; fencing and pegs, £736 3s 10d.; printing, stationery, and advertising, £116 15s.; miscellaneous expenses, £203 15s 3d; law and professional charges, £79 7s 6d; stamp duty £116 15s; compensation, £234 11s 11d £5,751 4s. 9d.

In order to encourage the allotment holders, an exhibition was held in the Town Hall on November 6 and 7, and was a great success. Regarding 1918, Mr. MORTER reports that almost all the allotment holders of 1917 have again taken up their plots, but, owing to the fact that the cost of labour and materials has increased during the past season by 40 per cent., it has been found imperative to reduce the size of the plots from 400 yards to 320 yards each.

PRESENTATION TO A GARDENER. On Friday, the 10th inst., the Bath Gardeners' Association made a presentation of a cheque and an illuminated address to Mr. W. TAYLOR, a veteran gardener residing at Bath. In the words of the address, the presentation was made "by the members of the Association as a token of esteem and regard, and in appreciation of the valuable services rendered to the Society since its formation in 1903, and particularly during the last session."

LAELIO-CATTLEYA J. F. BIRKBECK FOWLER'S VARIETY.—Forms of this cross between Cattleya Mendelii and Laelio-Cattleya Henry Greenwood (L.-C. Schilleriana × C. Hardyana) have been exhibited, notably by the late Sir FREDERICK WIGAN, at the Temple Show, May, 1905. The varieties were, however, never deemed worthy of an award by the R.H.S. Orchid Committee until, on March 30, 1915, the variety illustrated in fig. 91, shown by the late GURNEY FOWLER, Esq., was awarded a First-class Certificate. Nothing comparable to the variety has since appeared, and it may be concluded that the plant is one of those abnormally fine forms which occasionally appear to reward the raiser. The flowers, which are large and of fine shape, have white sepals and petals, slightly tinged with pink. The large labellum is ruby-crimson with gold lines from the base to the orange-shaded centre. At the sale of the Brackenhurst collection the plant was acquired by Sir JEREMIAH COLMAN, Bart., whose gardener, Mr. J. COTTER, was accorded a Cultural Commendation for the fine appearance of the plant at the Royal Horticultural Society's meeting on the 7th inst.

SUPERPHOSPHATES. The Minister of Munitions hereby orders as follows:—1. As on and from the date of this Order until further notice, the maximum prices to be charged or paid for superphosphate sold or purchased in quantities of 14 lbs. and over but less than 2 cwts. for delivery ex vendor's store or shop, or ex warehouse, railway goods yard or public wharf, shall be the prices specified in the Schedule to the Order relating to superphosphates made by the Minister of Munitions on August 20, 1917, with the addition of the following amounts, according to the quantity of superphosphate included in the sale or purchase, namely:—Quantity sold or purchased and additional price authorised: 1 cwt. and over but less than 2 cwts., 2s. per cwt.; 28 lbs. and over but less than 1 cwt., 3s. per cwt.; 14 lbs. and over but less than 28 lbs., 4s. per cwt.; and there shall be no restrictions on the price to be charged or paid for superphosphates sold or purchased in less quantities than 14 lbs. for delivery as aforesaid. 2. The foregoing provisions shall have effect as and by way of amendment of paragraph (c) of clause 1 of the said Order of August 20, 1917. And paragraph (d) of clause 1 and clauses 2 and 3 of the said Order shall henceforth apply and have effect as though the additional prices authorised by paragraph 1 of this Order had originally been authorised by paragraph (c) of clause 1 of the said Order of August 20, 1917. 3. This Order may be cited as the Superphosphates (Amendment) Order,

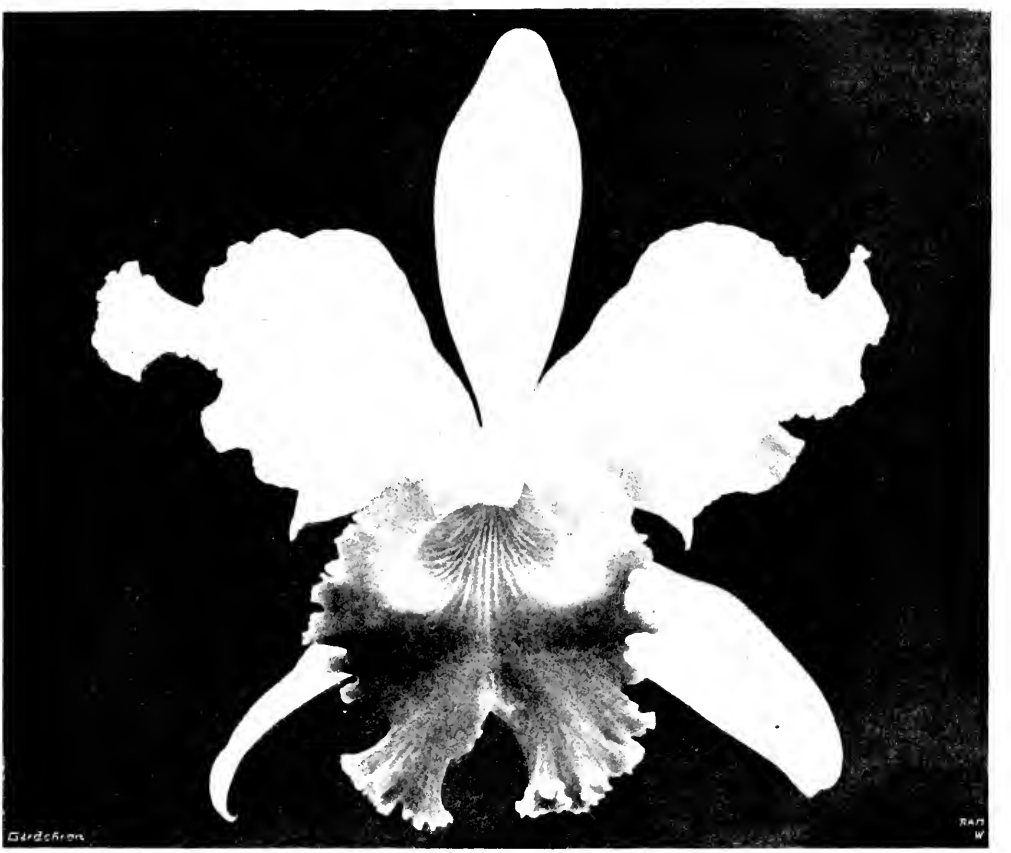


FIG. 91.—LAELIO-CATTLEYA J. F. BIRKBECK FOWLER'S VAR. THREE-QUARTERS NATURAL SIZE.
SEPALS AND PETALS WHITE, WITH BLUSH TINT, LABELLUM RUBY CRIMSON WITH A GOLDEN LINES TO THE ORANGE-SHADED CENTRE

1918. Note.—All applications in reference to this Order should be addressed to the Director of Acid Supplies, Ministry of Munitions, Explosives Supply Department, Storey's Gate, Westminster, and marked "Fertilisers."

GARDENERS AND SUPPLEMENTARY RATIONS.—The Ministry of Food has informed the British Gardeners' Association that gardeners are included in the list of those entitled to the supplementary ration, and will be graded under class E. Enquiries on the subject should be addressed to the Local Food Offices.

AMERICAN GOOSEBERRY MILDEW.—Growers of Gooseberries are reminded by the Board of Agriculture that, though no objection is raised to the dispatch of slightly affected berries to a jam factory in sacks or non returnable receptacles (as the mildew does not render the food unfit for consumption), yet, with the object of preventing the spread of the disease by means of infected baskets, it has been made an offence to sell or offer for sale in a market or shop any Gooseberries affected with American Gooseberry mildew.

GERMAN PRISONERS ON THE LAND.—The agricultural correspondent of the *Daily Telegraph* remarks that "the farming community has been vividly impressed with the excellent work that is being accomplished by German prisoners whose services have been utilised on the land. The almost unanimous verdict of the farmer able to judge is that the German prisoner is 'thorough' in his agricultural work. As for cleaning land, and getting it into goodly appearance, many farmers testify that the German (and Austrian) prisoner has done excellent work. The cry is for still more men to be used in the countless odd jobs necessary in agriculture. There is existing the machinery for putting far more prisoners of war on the land than there are at the moment. Some farmers have complained that the wages paid to Germans are too high: they are ruled by the current local rate, subject to a deduction of 15s. per week for board and lodging—but with British labourers growing fewer it would be better for agriculture if even more men were liberated from the German camps or agricultural depôts already instituted. Clearing ditches, laying drains, carting roots, cutting logs, threshing, and ploughing, are farm work in which the German prisoner excels. Farmers who have had the assistance of prisoners formerly used to agricultural duties have loudly proclaimed that their land was never so clean as it is at the moment."

COPPER SULPHATE FOR POTATO SPRAYING.—The maximum price fixed by the Government for copper sulphate in sales of not less than one ton for delivery from May to August by makers, free on rail, is £52 per ton. The maximum prices in the case of sales for delivery ex vendor's store, shop, or ex warehouse, railway goods yard, or public wharf, are:—2 cwts and over, 56s per cwt.; 56 lbs but less than 2 cwts., 58s. per cwt; 28 lbs. but less than 56 lbs., 60s. per cwt.; 8 lbs. but less than 28 lbs., 7d. per lb.; 4 lbs but less than 8 lbs., 8d per lb.; 1 lb but less than 4 lbs., 9d. per lb. The cost of transport to consumer's premises may be added to these prices, which are nett prompt cash for copper sulphate of standard quality, i.e., not less than 98 per cent. purity. Orders should be placed at once with local agricultural merchants, wholesale chemists, or ironmongers. If any difficulty is experienced in obtaining supplies, growers should communicate with the Food Production Department.

PUBLICATIONS RECEIVED.—***Tidal Lands: A Study of Shore Problems.*** By Alfred E. Carey, M.Inst.C.E., and F. W. Oliver, F.R.S. (London: Blackie & Sons, Ltd.) Price 12s. 6d. net. —***Grow your own Vegetables.*** By Stanley C. Johnson, D.Sc. (London: T. Fisher Unwin, Ltd.) Price 6s. net.—***Annual Report of the Board of Regents of the Smithsonian Institution*** for the year ending June, 1916. (Washington: Government Printing Office.)

ON INCREASED FOOD PRODUCTION.

LEEKS.

I NEARLY gave up planting Leeks in deep, wide, dibbed holes, on account of gritty products on the table, but I find conclusively that any grittiness is entirely the fault of the cook. Hence I continue to use the method. The chief point is to use a good tool; mine is made from an old pickaxe handle with a foot and a half long cross handle, the wider part of the shaft tapered off to a moderately sharp cone of oval section. This shape in section is best for all dibbers or dibblers, and my smaller ones are fashioned similarly; the usual tool is made circular, and is not so good for penetrating. In making holes for Leeks the main thing to attend to is working the tool sideways, so as to make a wide coned hole, the sides of which are well compressed together; the hole keeps open long and allows better growth, which is checked if the young plant gets nearly buried at the first rain shower. The tops of the plants are nipped off, and by a twisting motion the roots are induced to go down. Care must be taken not to press down when widening the coned hole, or a little soil will have to be dropped in to reduce the depth. When the water is poured in, to complete the planting, it should not be allowed to wash in the sides of the hole. My small dibber was made at the forge from a short piece of gas barrel welded at the tip, coned off, and the end flattened almost chisel-like; the rest of the pipe was slightly flattened to give an oval section; a T piece screwed on the top, and a couple of bits of stick, complete the handle. A good way of using the implement for planting Beans so that "they may see the gardener as he leaves the patch," is to dib holes very obliquely and roll the seed just within the little cave so formed. Birds do not seem to trouble the seeds which are thus practically on the surface. Nearly all my dwarf Beans were thus planted last year, and they will be similarly treated this season. An oval section is preferable for a hoe or serfouette handle: it lies better in the hand than the ordinary round shaft. *H. E. Durham.*

SUGAR BEET.

THE Food Production Department recommends small cultivators to grow Sugar Beet as a source of food for stock, apart from its value as a sweetening agent.

The crop may be sown on a variety of soils, and the most suitable are deep, medium loams. Deep cultivation of the soil is, in all cases, essential. Ordinary farmyard manure may be applied at the rate of from 10-12 tons per acre, with the addition of 1½ cwts. of sulphate of ammonia (½ oz. per sq. yard, 1 lb. per rod), and from 3-4 cwts. of superphosphate per acre (1 1½ oz. per sq. yard, and 2½-2¾ lbs. per rod) before sowing, or the sulphate of ammonia may be halved and one half held over and applied as a top-dressing after singling.

A good tilth is necessary at sowing time, and the seed is usually drilled on the flat, at distances of 16-18 inches between the rows, and 8-10 inches between the plants, or the small grower may adopt the dot system, as recommended in the special leaflet No. 8, issued by the Department.

The rate of sowing is about 10-12 lbs. per acre (1 1½ oz. per rod), and the best time to sow is the last week in April or first week in May. Constant stirring of the soil by the horse or hand hoe, as soon as the rows can be distinguished, tends greatly towards the production of strong, healthy seedlings. The crop is first roughly bunched by the hoe, and then singled by hand. Care should be taken in subsequent hoeings to damage the foliage as little as possible, as the crops yielding the largest sugar content are those which bear the best developed leaf system. The plant requires a long growing season, and should not be harvested prematurely, as the percentage of sugar increases to a marked extent during the final stages of ripening. The lifting period extends from the end of September to the middle of November, or a little later, according to the season. Ripeness is indicated by the leaves becoming yellowish-green in colour and drooping. About three-quarters of the foliage should have wilted, but the central leaves should still be fresh and green. The crop should be lifted and stored before there is any danger of hard frost, and only the tops removed by twisting.

In ordinary conditions a crop of 12 tons per acre may be expected, and there are instances on record where crops up to 18 tons have been obtained with an average of 16.5 per cent. of sugar.

For feeding purposes it is estimated that 4 lbs. of good Sugar Beet are equivalent to 3 lbs. of Mangolds or 1 lb. of cereal meals in mixed rations.

Numerous attempts have been made to utilise the roots for sweetening purposes, and the following recipes for the manufacture of syrup have been found satisfactory by private individuals.

SYRUP FROM SUGAR BEET.

(1) Peel and scrape the Beet and remove every particle of skin, then cut it in slices about one-third of an inch thick. Cover with water for two hours, then simmer for 3 hours, or boil and leave the vessel in a hay-box all night—a hay box is by far the best method. Strain and bottle. The syrup should be of a bright golden colour. In air tight bottles it will keep a month, otherwise only a few days; it is suitable for any kind of sweetening.

After straining the syrup chop the Beet and dry it in a cool oven; it can then be used in place of sultanas for cooking. If the pieces become very hard, soak them for 10 minutes in cold water before using; if they remain fairly soft use them as they are. If the pieces are not required to be used as sultanas afterwards, the raw Beet can be run through a mincing machine before cooking. This method of preparing the Beet for syrup gives a much quicker result.

(2) Clean and boil the Beet until well cooked, then rub the skins off and cut into thin slices and chop them up very fine. Put two pints of water in an enamel saucepan and bring to the boil, then put 2 lbs. of the chopped Beet in, and boil with the lid on for three-quarters of an hour. Press the juice through a fine sieve and strain it through a thick cloth. Put the strained juice into a clean saucepan and bring to the boil, then add half a teaspoonful of bicarbonate of potash. Keep boiling until reduced to one-third, pour into a hot bottle and cork at once. Nett weight of syrup about six ounces.

HARICOT BEANS.

THE French Haricot Bean is a valuable food, very useful for winter, and, when properly harvested, can be safely stored until needed. The white Haricot is a clear, white, plump Bean, plants of which produce a prodigious crop. The dwarf green Haricot is deliciously tender when cooked; the seeds are of a sea-green colour. The former is a Climbing Bean, the latter needs no sticks, and in habit resembles the dwarf Kidney Bean. A peck of seed is sufficient for sowing about an acre. The White Haricot may be sown at a distance of 4 or 5 feet from row to row; if it is desired to plant Brussels Sprouts or Christmas Cabbage between the rows to follow on, then the wider distance is preferable, as, if the crop makes abundant foliage, without plenty of space the second crop is apt to be too much shaded. With the dwarf Haricot the distance may be reduced, as sunshine can reach the pods more directly, and the leafage can easily be reduced at the close of the season if it is at all dense.

Formerly these Beans could be purchased so cheaply that no inducement was offered to at-

tempt their cultivation in England, but at this time the importation of all kinds of pulse is much restricted, and in the future this country must seek to rely more upon its own resources.

The Haricot Bean is susceptible to injury from cold temperatures; care must therefore be taken not to sow too soon, so as to avoid the late spring frosts. The first or second week in May is generally the earliest safe time to sow. A white frost would not hurt the seeds while under the ground; it is when the plants first show above the surface that they are most susceptible to injury from it, as often occurs to the seed potato.

Haricot Beans need rich soil if they are to do their best; but as their life is comparatively brief, they need feeding in such a way that they can readily take up all they require at the moment. This land that was richly manured for the previous crop suits them perfectly, for, being already incorporated in the soil, it is easily accessible.

The soil must be light and friable, and thoroughly well worked. An extra ploughing or some such previous treatment of the surface affords the best chance of success. Beans of this description call for more gentle treatment than many crops; the ground must be friable and without lumps, otherwise the plants will come up "blind."

When the seed germinates, the ground must be kept scrupulously clean, and the hoe will be needed to stir the surface so as to dispose of weeds when small. The plants must be handled very gently, as, unlike many field crops, once knocked down they do not lift up again; thus great care is required to obviate disturbance to the plant. A short handled hoe will be the safest tool to use between the plants so as to secure a clean surface, and, later on, a little mould should be gently drawn to each side of the rows as a support against violent gales. A careful woman, or a boy with a light hand does this work well, but a man accustomed to Turnip hoeing would probably be a failure.

We raised about 23 lbs. of Haricots from 4 poles of garden ground last season, and it appears that with fair treatment and under favourable circumstances good yields could be gained which would prove a useful addition to the food supply of the country.—*W. A. Gibson.*

FREE DISTRIBUTION OF VEGETABLE PLANTS.

Mr. Reginald Cory, Duffryn, near Cardiff, is raising vegetable plants for free distribution among the cottagers of ten neighbouring villages of Duffryn, Llancaitan, Bonvilston, Pendoylan, Peterston-super-Montem, St. Nicholas, Twyn-rodyn, The Downs, Wenvoe and St. George's. The original intention was to supply cottagers with plants of those vegetables which are usually started under glass, but the scheme now embraces every kind of vegetable that can be transplanted.

Printed forms were sent out to all the cottagers, and when these were returned it was found that well over 100,000 plants would be needed.

Delivery will be made in three lots, the first early in May, when Onions, Early Cabbage, possibly Early Lettuce, Red Cabbage, and Early Cauliflower will be sent out. The next delivery towards the end of May will include Tomatos, Brussels Sprouts, and mid-season Cauliflower. Broccoli, Kales and other plants will comprise the third lot.

In addition to supplying vegetable plants Mr. Reginald Cory has given seeds of vegetables other than those included in the plant distribution schemes to the wives of all cottagers who have joined the colours, and has also devoted a hundred guineas to various allotment associations for the encouragement of food production. Miss Cory has given thirty perches of land with complete sets of gardening tools, for the schoolboys of the local St. Nicholas School.

HOME CORRESPONDENCE.

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

LYSIOHITUM CAMTSCHATCENSE.—Mr. Watson's remarks on p. 145 (*Gard. Chron.*, April 5, 1913), and the illustration of this plant, seemed so strange to me after having seen the species in Mrs. Knox's garden, that I went to Kew last week to see it. I am now convinced that there are two forms, which, if not specifically distinct, are strikingly different in their habit and colour. On reference to the *Botanical Magazine*, 1904, t. 9,787, I find a figure of the yellow flowered form which was sent to Kew in 1901 from British Columbia, and was growing where it now grows, in a damp, shady corner of the temperate house. Mr. Watson stated that it had previously been unsuccessfully tried in the bog garden in the open air, but this was a plant from North Japan. Nothing was said in the *B. M.* about the colour of the Japanese form, which is white. Now, perhaps, I can explain the reason why the white flowered plant did not thrive at Kew in the bog garden by Mrs. Knox's experience. She received the plant from Japan and grew it most successfully in a pond as an aquatic where it flowers in May, but makes no offsets. The yellow flowered American plant, on the contrary, seeds profusely in the bog garden, a plant lately sent me in flower from Kew having seedlings of last year's growth at the end of the previous year among the flowering growth. The white flowered Japanese plant must be perfectly hardy or it would not live at Flower in Mrs. Knox's garden at 300 feet above the sea, and German states that in Yezo the spathes sometimes appear through the snow. Mrs. Knox tells me that she grows both the forms in water and that the yellow flowered one, though quite as showy and strong as another, both in leaf and flower if in the right water. But in the temperate house at Kew the white variety is alive but weakly, while the yellow flowered one is equally vigorous and twice the size of the same form in the bog garden though the leaves of Mrs. Knox's plant grown in water were much larger, and if I remember right not so erect. I believe I saw the plant in Hokkaido (Island of Yezo) in 1904, but the floods were so high that I could not reach it.—*H. J. Elwes, Colesbourne.*

THE PREPARATION AND COOKING OF DRIED BEANS AND PEAS. These appetising and nourishing foods would be in general use the year round if the modes of preparation and cooking were better understood. Dried pulse (Peas, Beans, etc.) should not be regarded as a separate and casual article of diet, but form the base and substance of at least one meal in each day. It is an important fact that it does take this place in the fare of many foreign and well-nourished peoples. To obtain the full flavour and value of dried Beans and Peas they should be cooked with some fatty material, such as fat bacon or bacon rind, or a piece of dripping or bacon fat, and they should be served with either a white sauce, Onion sauce, Tomato sauce, Parsley sauce, Caper sauce, or cheese sauce. They also form an excellent cold salad with ordinary salad dressing, either separately or mixed with Potatos and any other cold vegetables that may be liked. The method of cooking Haricot Beans is to place the Beans in a basin of cold water for about 12 hours, then gently boil or simmer till tender. The time required for boiling varies from 1½ to 2 hours according to the degree of hardness of the water; if simmered a longer time is required. Fat bacon or other fatty material should be boiled with them, as advised above. Dried Peas should be placed in a basin of boiling water, to which is added two teaspoonfuls of bicarbonate of soda. Cover the basin and leave the Peas to soak for 24 hours, taking care that they remain well covered with water. They should then be taken out, rinsed in clean water, and boiled gently (or simmered) until soft; a pinch of dried Mint and a teaspoonful of sugar should be added to the water, but no soda. The time required for boiling varies according to the degree of hardness of the water; in certain districts three-quarters of an hour may be found sufficient, but where the water is hard one hour may be necessary, or they may simmer for a longer time. When sufficiently cooked strain off the water, butter the Peas, and they are ready for table.—*Burr and Sons.*

SOCIETIES.

ROYAL HORTICULTURAL.

Scientific Committee.

MAY 7. *Present:* Mr. E. A. Bowles, M.A. (in the chair), Dr. Rendle, Dr. Bateson, Messrs. Allard, Hales, Fraser, Elwes, and Chittenden (hon. secretary).

Potato Seedlings.—The interesting and comprehensive exhibit of seedling Potatos of the "Castle" strain, shown by Messrs. Sutton, was referred to, and the award of a Certificate of Appreciation to Messrs. Sutton unanimously recommended, on the motion of Dr. Bateson, seconded by Mr. Hales.

Willow Gall.—Mr. Fraser showed young stages of the tassel gall of the Willow, older stages of which have frequently been before the Committee. He found the staminate flowers of Salix alba had been converted into pistillate form by the attack.

Onion Seedlings Destroyed.—Dr. Rendle drew attention to the damaging effect of a proprietary substance sold for killing worms, upon seedling Onions, as a warning against the use of unknown substances for the suppression of pests.

Diurnal Orchids.—Mr. Bowles showed an Odontoglossum with two flowers synanthic, and a Lælia with an abortive labellum.

Narcissus poeticus verus.—He also showed flowers of Linnaeus' form of Narcissus poeticus, a small flowered form, and one of the parents of Crimson Braid.

Various Plants.—Mr. Elwes showed an inflorescence of a Cypripedium, perhaps *C. grande*, Iris Hoogeana, and some of the Regelio-cyclus Irises, a very early flowered Uvaria, perhaps *U. ahoides praecox*; Moraea spathacea, which proved quite hardy in 1917, while the closely allied *M. Huttoni* is always killed in winter; Iris Wattii with inflorescences 6 feet tall, from a cold greenhouse, a close relation of *I. fimbriata*; a Trillium which succeeds remarkably well, seeding everywhere at Colesbourne, and known there as *T. stylosum album*; Fritillaria acmopetala, and the forms known as Elwesii and Whittallii, *F. lutea* and *F. armena*; Muscaria paradoxum and Bellevalia romana.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

APRIL 25.—*Committee present:* Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, J. J. Bolton, D. A. Cowan, J. C. Cowan, J. Cypher, J. Evans, J. Howes, A. Keeling, J. Lupton, D. McLeod, J. McNab, and H. Arthur (secretary).

AWARDS.

FIRST CLASS CERTIFICATES.

Odontoglossum Crawshayanum magnificum (*Harryanum* × *Hallii*), *Odontioda Juliet*, *O. Fire Queen* (*Odn. Bradshawiae* × *Odm. Prinzii rosea*), *O. Bradshawiae Fire King* (*O. Noezliana* × *Odm. crispum*), and *O. Brewii nigrum* (*Odn. Charlesworthii* × *Odm. Harryanum*), from P. SMITH, Esq.

Cattleya Tityus Perfecta (*Enid* × *Octave Doin*), and *Odontoglossum ardentissimum Doris*, from S. GRAFRIX, Esq.

Brasso-Cattleya Lachs Hon. Mrs. Wilson Ashlands var., from R. ASHWORTH, Esq.

AWARDS OF MERIT.

Odontioda St. Teresa (*Odn. Bradshawiae* × *Odm. waltonense*), from R. ASHWORTH, Esq.

Odontoglossum Conqueror (parentage unrecorded), from Messrs. ARMSTRONG AND BROWN.

GROUPS.

Large Silver Medals were awarded to R. ASHWORTH, Esq., Newchurch (gr. Mr. Davenport), and W. R. LEE, Esq., Heywood (gr. Mr. C. Branch), for collections.

CROPS AND STOCK ON THE HOME FARM.

STORE CATTLE.

Now is a good time to get all store cattle from the yards into the open on grass, choosing, if possible, a warm site for a start: shelter from north and east winds is most desirable. It possible, continue to feed with Mangold for a time, as where the grass is old the cattle will not take kindly to it at once. A supply of water is important: some animals require more water than others, but all should have an opportunity of drinking.

CEREAL CROPS.

It is a pleasure to be able to state that, taken as a whole, I have never seen the cereal crops looking so well as at the present time. The dry weather during the whole of March enabled the sowing of Oats and Barley to be done in a satisfactory manner, whilst the rains of April aided germination, giving a fillip to growth which is highly satisfactory.

At one time I feared the Oats might not generally be good in their percentage of germination owing to the very bad weather experienced last harvest, when rain was so continuous that many ricks were made in none too dry a condition, which is apt to produce heating of the whole, thus impairing the germinating power of the grain used as seed. In addition, the Oats were especially light, many samples weighing but 30 odd lbs. per bushel instead of 40 lbs. Yet the growth of Oats this spring is remarkable, and sets one thinking whether we set too much store on highly grown samples of seed corn. Here and there are a few patches of irregular growth, caused by wire-worm attacks, but, fortunately, such instances are rare, except, perhaps, in newly broken up pasture. Much of the defect due to the pest can be traced to the want of stimulative food. Where grass land was ploughed and sown with Oats without receiving manure of any kind, disappointment is in some cases bound to follow, because the grass was in many instances of an unsatisfactory character for the same reason, namely, poverty. I fear many who have ploughed up grass land of this character will be inclined to say "I told you so." In my case I ploughed and sowed Oats on turf that had certainly not been disturbed for one hundred years, but I applied silt, superphosphate, and sulphate of ammonia as advised. I may be told by a common expression "you bought the crop." I am looking farther ahead in my treatment of such crops than the present year. Such a crop will be a good preparation for Potatos, Mangolds, Sugar Beet, Onions, and other root crops.

Wheat promises so far to be the crop of the year. Never in this neighbourhood, which is a fairly large Wheat-growing district, have I seen this cereal so promising. The recent frosty nights and continued cold winds have robbed the plant of some of its colouring matter; this, however, will return with warmer weather. The growth is strong and tillering is vigorous, and where weeding has been carefully done the outlook is most favourable.

THE GROWING OF GRASS AND CEREAL CROPS TOGETHER.

Recently articles have appeared in the daily Press of a startling nature on the dual growth of grass and cereals, which, if found to be of a practical character, will to an extent revolutionise the whole system of production of these crops. We are asked to give the matter a fair trial, which is common sense, but the whole matter appears fraught with objections.

In the first place, I have always regarded the Wheat plant as an annual. I have also yet to learn that the ordinary Tartarian Oat is hardy; the latter does not ripen until the end of August as a rule, and often later, whereas the grass is ready for mowing for hay in June or at the latest in July. In heavy and stony soil I can see difficulties in drilling the corn, and in cutting it if the crop should be heavy and at all laid, but we are told that the grass supports the straw and that the straw crop aids the grass when made into hay. Certainly it may in bulk, but what of its quality? I would certainly go a long way to inspect such a trial before condemning the method. *T. Molyneux.*

MARKETS.

COVENT GARDEN, May 15.

Ferns and Palms: Average Wholesale Prices.

	s. d.	s. d.
Adiantum cuneatum, 48's, per doz.	9 0-	10 0
— elegans ...	9 0-	10 0
Asplenium, 48's, per doz. ...	9 0-	12 0
— 32's ...	21 0-	24 0
— nidus, 48's ...	10 0-	12 0
Cyrtomium, 48's ...	8 0-	10 0
Nephrolepis, in variety, 48's ...	12 0-	18 0
— 32's	24 0-	36 0
Pteris, in variety, 48's	8 0-	12 0
— large 60's ...	4 0-	5 0
— small 60's ...	3 0-	3 6
— 72's, per tray of 18's	2 0-	2 6

REMARKS.—Business is now more brisk in this department. The chief attractions are pots in boxes. Large quantities of bedding plants are also being sold. New lines in flowering plants are Crassulas and Verbenas.

Cut Flowers, &c.: Average Wholesale Prices.

	s. d.	s. d.
Arums—		
— (Richardias), per doz. blms.	9 0-	10 0
Azalea, white, per doz. bunches...	6 0-	8 0
Carnations, per doz.		
— blooms, best American var.	2 0-	3 0
Croton leaves, per bun.	1 3-	1 6
Eucharis, per doz. blooms	3 0-	4 0
Gardenias, per box (12's)	5 0-	6 0
— (18's)	3 0-	4 0
Gladiolus Peach Blossom, per doz. bun.	24 0-	30 0
Gypsophila, white, per doz. bunches	12 0-	15 0
Heather, white, per doz. bun...	9 0	12 0
Iceland Poppies, per doz. bunches	6 0	—
Iris, Spanish, per doz. bunches—		
— white	24 0-	36 0
— blue	24 0-	36 0
— yellow	24 0-	30 0
— mauve	24 0-	30 0
Ixia, red, per doz. bunches ...	3 0-	4 0
Lilium longiflorum, long	9 0	10 0
— — rubrum, per doz. long ...	5 0-	6 0
— — short, per doz blooms ...	2 6-	3 0
Lily-of-the-Valley, per doz. bun ...	12 0-	21 0
Narcissus, double white, per doz. bun	4 0-	5 0
— pheasants, per doz.	2 0-	2 6
Orchids, per doz.—		
— Cattleyas ...	12 0-	15 0
Pelargoniums, double scarlet, per doz. bunches...	12 0-	18 0
— white, per doz. bunches ...	6 0-	8 0
Roses, per doz blooms—		
— Frau Karl Druschki ...	3 0-	5 0
— General Jacqueminot ...	2 0-	2 6
— Joseph Lowe ...	3 0-	4 0
— Lady Hillingdon ...	2 0-	3 0
— Ladylove	4 0-	6 0
— Liberty	4 0-	6 0
— Mme. Abel Chatenay ...	3 0-	5 0
— Niphetos	1 6-	2 6
— Richmond	3 0-	5 0
— Sunburst	3 0-	5 0
Stephanotis, per 12 sprs	3 0-	3 6
Stock, English, per doz. bunches ...	6 0-	8 0
Sweet Peas, various, per doz. bun ...	9 0-	18 0
Tulips—		
— Darwin, various, per doz. bun,...	6 0-	12 0
Viola cornuta, per doz. bun. ...	2 6-	3 0

Cut Foliage, &c.: Average Wholesale Prices.

	s. d.	s. d.
Adiantum (Maiden hair Fern) best, per doz. bun ..	6 0-	8 0
Asparagus plumosus, long trails, per half-dozen	2 6-	3 0
— — medium, doz. bunches	18 0-	21 0
— Sprengeri ...	10 0-	15 0
Berberis, per doz. bun. ...	6 0-	8 0
Carnation foliage, doz. bunches ..	4 0-	5 0
Cycas leaves, per doz.	3 0-	6 0
Ivy leaves, per doz. bunches.. ...	2 0-	2 6
Moss, gross bun...	7 0-	8 0
Smilax, per bun. of 6 trails ...	4 0-	4 6

REMARKS.—With the exception of L. longiflorum and Richardias (Arums), the market is better supplied, and prices are lower all round. Double White Narcissus are the leading line in Cut Flowers. There is also a plentiful supply of Narcissus poeticus, which is arriving in good condition. Gardenias, Peach Blossom, Iceland Poppies, Gypsophila, and Stocks are getting more plentiful. There is a shortage of supply. Lilies of the present time, but most of the blooms are damaged by heavy rain, and practically unsaleable. The supply of red Roses is insufficient to meet the demand, but other colours are more plentiful, and a trifle easier in price. Scarlet and white flowers will be in demand during Whitsuntide and Saturday is the Whit-sun Festival.

Vegetables: Average Wholesale Prices

	s. d.	s. d.
Artichoke, globe, per doz. ...	4 0-	5 0
— Jerusalem, per ½ bushel ...	1 6-	2 0
Asparagus, per bundle—		
— Continental ...	0 0-	2 6
— English ...	1 0-	5 0
Beans:—		
— French (Channel Islands), per lb.	1 6-	2 0
Beetroot, per cwt. ...	5 6-	7 0
Carrots, new, per doz. bunches ..	4 0-	5 0
— per bag ...	8 0-	10 0
Cauliflowers per doz	6 0	—
Cucumbers, per flat	20 0-	26 0
Endive, per doz ...	1 0-	2 0
Garlic, per lb. ...	0 8-	0 10
Greens, per bag ...	5 0-	9 0
Herbs, per doz bun.	2 0-	4 0
Horseradish, per bun.	3 0-	4 6
Leeks, per doz. bun.	3 0-	4 0
Lettuce, Cabbage and Cos, per doz	0 4-	1 6
Mint, forced, per doz. bun. ...	4 0	—
Mushrooms, per lb.	1 6-	2 0
Mustard and Cress, per doz. punnets	1 0-	1 3
Onions, French, per cwt.	44 0-	46 0
— spring, per doz. bun.	4 0-	5 0
— Valencia, per case (4 tiers) ...	44 0-	52 0
— (5 tiers) ...	44 0-	52 0
Parsley, per strike ..	2 0	—
Parsnips, per bag ..	6 0-	7 0
Peas, per lb.	1 6-	2 0
Potatos, new, per doz. lb.	7 0-	8 0
Radishes, per doz. bunches	1 0-	2 0
Rhubarb, forced, per doz.	3 0-	4 0
— natural, per doz.	10 0-	12 0
Seakale, outdoor, per 1 bus.	12 0-	14 0
Shallots, per lb.	0 9-	1 0
Spinach, per bus....	3 0-	4 0
Swedes, per bag ...	2 0-	3 0
Tomatos, per lb. ...	2 0-	2 6
Turnips, per bag ...	14 0-	15 0
— new, per bunch	0 8-	0 10
Vegetable Marrows, per doz.	8 0-	9 0
Watercress, per doz	0 8-	0 10

Fruit: Average Wholesale Prices.

	s. d.	s. d.
Dates, per box ..	1 0-	1 8
Figs, Worthing, per doz ...	5 0-	12 0
Grapes:—		
— Black Hamburgh, per lb ...	3 0-	6 0
— Muscats, per lb.	8 0-	15 0
Lemons, per case...	63 0-	65 0
Melons (each) ...	5 0-	8 0
— cantelope (Continental)	30 0	—
Oranges, per case	110 0-	120 0
Peaches, per doz...	12 0-	36 0
Strawberries, forced per lb. ...	4 0-	8 0
Walnuts, kiln dried, per cwt. ...	120 0	—

REMARKS.—Many hothouse fruits are available, including Grapes, Peaches, Strawberries, Melons, and Figs. Among forced vegetables, Peas, Dwarf Beans, Mushrooms, Vegetable Marrows, Cucumbers, Tomatos, and New Potatos are obtainable. Continental Asparagus continues to be obtainable, and English Asparagus is now on offer from all well known sources. Some very fine bundles are arriving from Devonshire. *E. H. R., Covent Garden Market, May 15, 1918.*

DEBATING SOCIETIES.

BRITISH GARDENERS'.—A meeting of the British Gardeners' Association was held in the Assembly Rooms, Bath Street, Leamington Spa, on Saturday, April 20. The chair was taken by Mr. Joe Sides (chairman of the Allotments Federation). An address was given by Mr. Cyril Harding on the aims and objects of the association. He made special reference to the poor rate of pay gardeners received. By organisation he felt sure that the conditions of the gardener could be considerably improved. At the close of the meeting the Leamington branch was reconstituted, Mr. R. Greenfield being appointed secretary.

SCHEDULES RECEIVED.

Liverpool Horticultural Association's Exhibition, to be held in St. George's Hall, Liverpool, on Friday and Saturday, August 23, 24, 1918. Hon. Secretary, Mr. E. R. Pickmere, Town Clerk, Municipal Buildings, Liverpool.

National Dahlia Society's Annual Floral Meeting, to be held in conjunction with the R.H.S. fortnightly meeting on Tuesday, September 10, 1918, in the London Scottish Drill Hall, Buckingham Gate, Westminster. Hon. Secretary, Mr. J. B. Riding, Forest S.fs., Chingford.

ANSWERS TO CORRESPONDENTS.

CORRECTION: *Calceolaria Chibranii* was not raised at the John Innes Institute, as stated by our reporter on p. 200.

CUCUMBER LEAVES DISEASED: *S. G. T.* The Cucumber leaves are affected with the disease known as "spot," caused by the fungus Cercospora Melonis. Do not permit the plants to produce soft foliage, but ventilate the house freely. Remove and burn badly diseased plants, and spray the foliage and soil with liver of sulphur solution (1 oz. to 3 gal. water).

MULBERRY PROPAGATION: *A. D.* The old Mulberry tree you mention may be perpetuated by cuttings. Choose well-ripened shoots of the preceding year, leaving at the base a little of the older wood, and insert them now in fairly rich, but not heavy, soil. They may be planted in rows one foot apart, and 6 inches apart in the rows. Shade them from bright sunshine until they are well established. Another method is to pot the cuttings and plunge the pots in a mild hot-bed until they are rooted, afterwards hardening them and placing them out-of-doors. Water moderately, and protect the plants from severe weather during their first year, after which they may be transferred to their permanent quarters.

NAMES OF FRUITS: *S. A.* Apple D'Arcy Spice. Pippin syn. Spring Ribston!.—*W. B. and S.* Annie Elizabeth.

NAMES OF PLANTS: *Kildare.* Scilla hispanica, the Irish Wood Hyacinth.—*E. D.* Tulip Prince of Austria.—*C. E. I.* 1. Rhodotypos kerrioides; 2. Lathyrus vernus var. carneus flore pleno.

PEAS EATEN: *H. B.* The grubs you send are those of the Crane fly, or "dubbly-do-legs." The best preventives of this pest are good drainage of the land and the removal of useless herbage and weeds; but the best way of getting rid of the grubs now is to encourage the starling, which is inordinately fond of "leather-jackets." If the ground is turned up frequently, insect-eating birds will thoroughly search it for the grubs, and finally completely clear it of these and other ground pests.

Communications Received.—Lochnagar—E. H. E. W. L.—H. C.—W. T.—W. W.—W. R.—L. A. T.—B & Sons—E. B.—W. H. Johns.

THE
Gardeners' Chronicle
No. 1636.—SATURDAY, MAY 25, 1918.

CONTENTS.

ILLUSTRATIONS.

ON INCREASED FOOD PRODUCTION.

RUNNER BEANS.

RUNNER BEANS need a rich, holding medium, and grow freely and crop heavily in ground that has been well trenched during the winter and enriched with plenty of animal manure. Failing this treatment, trenches may be made about 2 feet wide and 1 foot deep. The loose soil should be taken out, a fair quantity of farmyard manure placed in the trench, and the dung well forked in with the bottom soil. Replace the top spit of soil on the dung and allow it to settle until the time for planting arrives. It is not advisable to plant Runner Beans in the open too early, especially in the Midlands and North, unless the plants can be protected at night, which is not always practicable. The second or third week in May is soon enough. Poles or long, twiggy Pea sticks should be used to support the plants, and I prefer to place them in position before the Beans are planted, as this plan involves less danger of damaging the roots in pushing the sticks into the ground. Two stout poles should be placed at either end of the row and a wire stretched between in order to fasten the sticks: this is especially necessary if the site is exposed. With good cultivation Runner Beans will grow 10 or 12 feet high and crop from top to bottom of the plants. Before transplanting them from boxes make the soil firm, and rake the surface neatly. Have the boxes handy, and water the soil before removing the plants carefully with a trowel. They should be planted about 1 foot apart and close to the sticks. When the row is completed water the plants by means of a rose can early in the day, that the foliage may be dry again before nightfall. The plants will need tying to the stake at the start, but afterwards they will twine themselves around the supports as they grow. It is not advisable to allow them to make too much growth: they will produce much heavier crops if the shoots are kept thinned, and where time and labour permit this should be done. In dry weather frequent applications of water, both at the roots and overhead, will be very beneficial, and watering is best done in the late afternoons. The pods should be picked as soon as they are ready for use, to allow the younger ones to develop; if not required for use at once, the stalks may be placed in a jar of water in a cool place, when the pods will keep fresh for some time, or they may be salted down for use in winter. A light mulching of half-decayed manure, applied during the hottest part of the season, will assist the plants to grow freely, and greatly lessen the labour of watering. Those who have no facilities for sowing seed in boxes should take the trenches level, as previously advised, and sow the seeds edgeways about 2 inches deep. It is preferable to make the holes with a trowel, and not with a dibber. As soon as the young plants appear through the soil give them a dusting of soot to ward off slugs, and use the Dutch hoe between them on frequent occasions. Subsequent cultivation will be the same as for those planted out. *R. W. Thatcher, Carlton Park Gardens, Market Harborough.*

LATE PEAS.

It is comparatively easy matter to grow a good supply of early and mid-season Peas, but there is generally a difficulty in securing pods during August, September and October. To ensure late crops extra care is necessary in the preparation of the land, and suitable varieties must be selected. I have tried many methods in the preparation of the land for late Peas, and I have for some time come to the conclusion that well prepared trenches are much the most satisfactory system. The trench should be about 18 inches wide and the soil excavated to the depth of about 15 inches. The subsoil should be deeply broken up, and on this should be placed about 10 inches of well-decayed farmyard manure, at the same time applying a dusting of lime or soot. The first of the soil should be returned to the trench and the seeds sown singly, in double rows just as thick again as it is intended the plants should remain, removing every other plant when about 3 inches high, should the rows be gappy from any cause the spare plants may be carefully replanted to make good the failure. One of the common causes of failure with late Peas is attempting to grow the plants too thick. When this is the case they naturally starve each other, mildew is almost certain to appear, and the result is a very short and poor crop.

During spells of drought abundance of water should be given, and liquid manure used freely; the trenches afford a very easy way of applying moisture. Sowings should be made onwards at intervals of ten days to the middle of June.

There are many varieties suitable for late sowing, and some do much better in one district than in another. I rely on those well-tried varieties Autocrat and Masterpiece, the latter undoubtedly being a selection from the former. Both varieties are of fine constitution, give pods of good quality, are much less subject to mildew than many others, and succeed well in most parts of the country. There is still room for improvement in late Peas. We need a larger-podded variety of Ne Plus Ultra flavour (which is unsurpassed as a late Pea in this direction, but not sufficiently prolific). Another desirable quality would be a robust constitution like that of Autocrat. *Edwin Beckett.*

CATCH CROPS UNDER GLASS.

THE members of the Lea Valley Federation of Market Gardeners have this year given a notable example of their desire to do all in their power to promote food production by growing catch crops under glass in Tomato houses. When it is remembered how long the Tomato crop remains on the ground, the time taken up with seed raising and with the preparation of the soil, it will be recognised that it was asking a good deal in these days of shortage of labour for the growers to add to their labours. Furthermore, the suggestion—which came from the Food Production Department—gave but the minimum of time for carrying it out.

Nevertheless, in many cases excellent crops were obtained—particularly of Lettuces White Gott and Black Gott. In spite of the dull weather experienced in early spring these varieties of Cabbage Lettuce—excellent for frame work—hearted well and gave good heads which found a ready market. In some cases, however, the variety sown gave very indifferent results, so poor, indeed, in comparison with the best, as to make it doubtful whether the poor and good plants were of the same variety. The plan adopted was to sow Radish broadcast and to pick out the Lettuces in rows, the idea being to pull the Radish before the Lettuce began to heart. But this year's experience has led to the general opinion that it would be best to sow the Radish in drills. From an inspection of the experiment we think that it may be said to have been successful and to have demonstrated the possibility of squeezing in a catch crop before the main Tomato crop is planted—at all events in those houses the soil of which had not been sterilised. A point in favour of the practice consists in this, that the catch crop does not want fire-heat—the best results were manifestly those in which no more heat had been used than was sufficient to keep out frost. We would congratulate the growers in the Lea Valley on making the experiment, and hope that a further trial on similar lines will be made in the coming year.

ARTIFICIAL MANURES.

As a consequence of the scarcity of farmyard manure many kitchen gardens have not received their necessary complement of animal dung this year. The deficiency may be made good to a certain extent by the use of artificial manures, but it is well to remember that they cannot altogether take the place of farmyard manure. The fertility of the soil is dependent upon texture as well as upon food content, and the continued exclusive use of artificial fertilisers would cause the texture of the land to deteriorate. Furthermore, many artificial manures supply only one of the plants' requirements. Examples of this class are superphosphate of lime, used to supply phosphates, and nitrate of soda, employed to yield a readily available nitrate. Light soils are generally deficient in potash. The ordinary sources of this fertiliser are cut off, but wood ash contains a fair amount of potash: leguminous crops on light land respond well to wood ashes, applied when the seed is sown, at the rate of 3 ozs. per lineal yard of drill. Wood ash should be kept dry to ensure its even distribution, and to preserve the very soluble constituents. On heavy land which has been limed there is usually sufficient available potash to carry the crops without an artificial supply. Superphosphate of lime may be scattered in all drills at the time of seed-sowing. The phosphate gives to the seedling the advantages of a good start. The quantity to use is 2 ozs. per lineal yard. Nitrogenous manures, on the contrary, should not be applied at seed time. They are more useful if used in the season of growth. Those vegetables that grow more than 1 foot in height may have a dressing of nitrate of soda or sulphate of ammonia when they are 6 inches high. There is not much to choose in the two manures, but at present sulphate is the more plentiful. Some growers prefer to dissolve these substances in water before application, but if they are carefully distributed over the soil in showery weather there is no necessity to do so. Use 2 ozs. per lineal yard. In the case of Potatos, apply the sulphate of ammonia immediately before the first and second earthing. Cabbages, particularly at the present time, will also respond to a dressing of sulphate of ammonia. The quantity required is 3 ozs. to the square yard. Onions respond particularly well to dressings of soot. They may be given fortnightly from the middle of May onwards. Should showers not be opportune the application may be made in the evening and be thoroughly watered in. It is probable that the odour of soot acts as a deterrent to the Onion fly. Dressings of soot are also beneficial to Carrots and Parsnips, and may be applied in the same way as suggested for Onions. *Geo. H. Copley.*

LETTERS FROM SOLDIER-GARDENERS.

WHAT WE MAY LEARN FROM THE ARMY RIVETTING.

In a military sense, the term rivetting means using various kinds of material to hold up loose soil in a more or less vertical position. The means adopted seem to me to possess some horticultural uses and possibilities.

The materials generally employed for rivetting are sheets of corrugated iron and wire netting of various types. Wattle hurdles are also used at times, and are found very effective. The wire netting is stretched along the sides of the trench and stout posts are driven in to keep it in place. The most common of all methods of rivetting is by building sandbags up the sides. Good work of this description should present one row of headers and one of stretchers. In other words, one row has the bags placed lengthways and the succeeding row has the bags of earth with their ends forming the facing. We are unlikely to find any need for using sandbags of earth in gardening, although it may be said that a well-built wall of sandbags always reminds me of a dry-wall used in gardens for growing suitable plants in the crevices. It is customary in many gardens, and I hope it will soon be general, to make a large, long, rectangular heap of leaves in autumn and winter and provide bottom heat for box frames, to be used for forcing and forwarding vegetables. Without straw or litter it is practically impossible to build these heaps so as to bear the necessary traffic of attending to the frames, and they might be enclosed by thick, strong, coarse meshed wire netting, kept in place by stout posts. Wattle hurdles or sheets of corrugated iron might also be employed for the purpose. Not only would the leaves be kept in position despite the treading, but they would not be blown about and cause a nuisance in other parts of the garden. Where the height of the enclosure approached 4 feet Tomatos could be grown in summer against that portion exposed to sunshine.

There is another case where I think this method of rivetting might be used horticulturally. Soil could be banked in the shape of a dry wall, faced with any stones which happen to be at hand, and rivetted with coarse-meshed netting kept in place by poles. The posts could soon be furnished with suitable plants, and when the face of the wall was draped with Aubrietia, Arabis, and the many other suitable subjects, I could, few would be so hypercritical as to complain of the appearance of the wire netting.

There is another kind of rivetting to which I would like to call attention. Even miles behind the firing line the huts and tents are protected from shell fire and bombs. Obviously, it is impossible to protect oneself from a direct hit, but there are more casualties from splinters than from direct hits, and it is possible to protect the occupants from the majority of these. I am giving away no military secret in showing how this is done. About 2 feet from the outside of the hut, and all round it, is built up an enclosure of wire netting, which is about 4 feet high, 3 feet wide at the base, and 2 feet at the top. This enclosure is held in place by posts driven in at an angle, so that each pair inclines to the other. The space is then filled with soil.

I have often thought how pretty these places could be made to look if we could clothe them with Arabis, Aubrietia, Cerastium, Saxifraga, Sedum, Sempervivum, Alyssum saxatile or argentium, Nepeta Mussinii, Iberis sempervirens, Wallflowers, Erysimum, Viola cornuta, Valerian, Dianthus, Helianthemum, and similar plants. Even such subjects as Ivy leaved and Zonal Pelargoniums would conceivably do well if the soil was suitable.

It would also be possible under a rivetting scheme similar to that suggested to build a wall of soil, say, 1 foot thick, with perpendicular faces, to be used as a pit. We need then only set over it a framework to guide the lights, to obtain as inexpensive cold pit. In the case of a hole dug to receive fermenting material for forming a hotbed, the various methods of rivetting the sides to which I have already alluded would prove very useful. *William F. Rowles, B.E.F.*

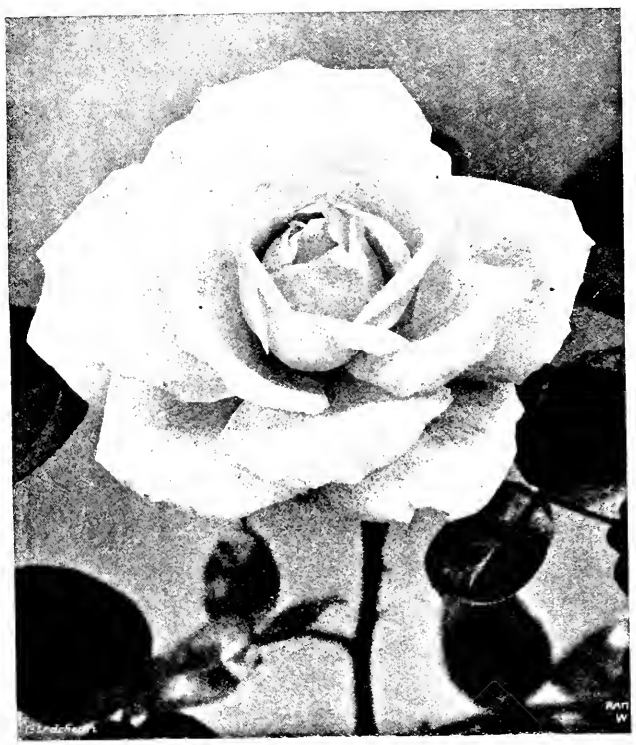


FIG. 92.—ROSE MRS. ELISHA HICKS: PETALS BLUSH WHITE, THE CENTRE ONES PALE PINK.

THE ROSARY.

FRAGRANCE IN ROSES.

Fragrance in the Rose is among its greatest charms, and it would be well if it could be considered an essential attribute in a first-class flower. Unfortunately, judges of exhibition Roses have never been directed to pay any attention to their fragrance, with the result that among the Roses most frequently exhibited in boxes there are several which are defective in this respect. Instances that occur to one are Frau Karl Druschki, Mildred Grant, Lyon Rose, Mrs. Theodore Roosevelt, and perhaps Mrs. J. H. Welsh, all of which are high in the exhibition list. Perhaps it is because these Roses and others like them are so often seen at shows that it has of late become customary to deplore the fact that the modern Rose is lacking in perfume.

I am by no means willing to admit the truth of the indictment, and feel confident that those who bring the charge do so only because they have not been at the trouble to seek for the charm of fragrance in the modern Rose.

True it is that many of the old-time Roses were sweetly perfumed, such as Marie Baumann, Etienne Levet, Horace Vernet, Sénateur Vaisse and Général Jacqueminot! Is it not a joy to put one's nose into any of them and inhale their refreshing odour? But an equal pleasure can be obtained from many new varieties, if we are only careful in our choice. Mrs. George Norwood, Queen of Fragrance, Colcestria and Hoosier Beauty have all the charm of the rich Rose perfume that many attribute to the Damask Rose.

There are some who profess to find the scent of various kinds of fruit in the derivatives of Persian Yellow, which we owe to the industry of M. Pernet Ducher. I am not one of these. Not that I doubt their statement for a moment, but I have arrived at the conclusion that my sense of smell is defective in this respect and does not respond to these fruity odours; thus Rayon d'Or and Louise Catherine Breslau are to me odourless.

Be that as it may, I none the less welcome warmly the arrival of a flower with the full Rose perfume, and all the more when it is particularly good in form. Both these attributes are to be found in the variety Mrs. Elisha Hicks (see fig. 92), which was exhibited at the Drill Hall on the 7th inst., when the National Rose Society arranged special classes for Roses.

The bloom of this new variety is of medium size, but perhaps large enough for the front row of the exhibition box, and has a pleasing, pointed form, with sufficient petals to be described as a full flower, and, as shown, appeared to carry itself well on a good stiff stem. The colour is blush-white with pinkish flesh shade in the centre of the flower. The colour, no doubt, is the weak point of the Rose, for though the blooms that were exhibited looked delightfully fresh, yet one knows that flowers of this tint sometimes seem rather wanting in character in the garden. The fragrance, however, was full, strong, and most captivating, so as to give quite a distinctive character to the variety. I hope we may find flowers from plants grown in the open equally good. *White Rose.*

NOTES ON CONIFERS.

XIX.—ABIES FRASERI.*

WHILE inspecting the young trees in what is known as the Centenary Plantation on Mr. Elwes' estate at Colesbourne last August, I was much interested to find two vigorous young specimens of this rare Balsam Fir, which, strange to say, although planted in a situation peculiarly subject to late and early frosts, at about 500 feet above sea-level, have succeeded as well as any of the Conifers planted there for experimental purposes, and have remained in a healthier condition than any other Fir that has been tried in a locality where hardly a single species has escaped injury from frost. In the published notes on this plantation† these two trees are mentioned as having come from Barbier, Orleans, as Abies Fraseri. Mr. Elwes says they were planted about fourteen years ago, and he considers their identity doubtful, but I have no doubt in my own mind that they are correctly named. At present these trees look like making really good specimens, as they are now about 15 feet high and making vigorous growth. They were planted in a clayey loam, known geologically as "Midford sand" which is of quite a different nature from the surrounding oolite. Last year they produced an abundance of cones, as will be seen from the branch illustrated in fig. 93, and the cones, with their reflexed bracts, at once give an additional clue to their identity. However, it is quite possible to dispense with the cones for the purposes of identification, as A. Fraseri may always be known from its near ally A. balsamea, by its branchlets being more densely pubescent and the broader lines of stomata on the lower surface of the leaves, which are coriaceous in texture. The leaves are also shorter and broader than in A. balsamea.

There is no record of Abies Fraseri having attained any considerable size in this country. All the specimens I have seen hitherto have been a few feet high, generally in nurseries where it is sometimes confused with A. balsamea. The latter seems to be much commoner in cultivation. The cone-bearing branch of A. Fraseri figured in Mr. Clinton Baker's *Illustrations of Conifers* was from a dried specimen in the Kew Museum taken from a tree which used to grow near Moreton-in-the-Marsh, Gloucestershire. This species also formerly existed at Bayfordbury but the tree planted there in 1838 was killed by the terribly severe winter of 1860, which was responsible for the death of many rare and interesting Conifers all over the country.

Abies Fraseri was named after its discoverer, John Fraser (1750-1811), a keen collector of North American plants. He found it in the Alleghany Mountains about 1800. In its native country it has a very local distribution, being found wild only on the Alleghany Mountains in South-Western Virginia, North Carolina, and Eastern Tennessee, where it forms forests at 4,000 feet to 6,000 feet elevation. Its usual height is about 40 feet, but trees up to 70 feet high are on record. Abies Fraseri was first cultivated in this country in 1811, when plants were distributed from Charles Lee's nursery at Hammersmith. The figure in the *Pinetum Woburnense*‡ was taken from the original tree in this nursery, where it had attained a height of 16 feet, and was then about 28 years old. It is very unlikely that any of the original specimens are now living, as this Fir, like A. balsamea, is a short-lived tree. *A. Bruce Jackson.*

* *Abies Fraseri*, Poiret in *Lamarck. Dict. Suppl.*, V., 35 (1817), Forbes, *Pinet. Woburn.*, III., t. 33 (1840), Sargent, *Silva. N. Amer.*, XII., 105, t. 609 (1898); Masters, *Gard. Chron.*, VIII., 684, t. 132 (1890); Kent, *Veitch's Man. Conif.*, 500 (1900).

Pinus Fraseri, Lambert, *Genus Pinus*, I., t. 42 (1832).

Picea Fraseri, Loudon, *Arb. et Frut. Brit.*, IV., 2340 (1838).

† Elwes and Pritchard, "Experiments on Trees at Colesbourne," *Quarterly Journal of Forestry*, April, 1912.

‡ It had not been known at Woburn since Forbes' time until young plants were recently introduced.

OLD FRENCH GARDENING BOOKS.

MR. BENYARD'S discovery as to the authorship of *Cotton's Planter's Manual* supports what I have so often emphasised—that our earliest garden literature was in the main nothing more or less than translations from the French.

If we begin with Peter Treveris's *The Grete Herball*, one edition of which is reported to bear upon its title-page "translated out ye Frensshe into Englysshe," we shall find many other English works to follow that owed their origin to French writers. The original of *The Grete Herball*, was no doubt *Le Grant Herbier en françoys Contenant les qualitez Vertus & proprietez des Herbes, Arbres, Gommes, & Semences*, which it is believed was first published about 1520, a strong argument in favour of the contention that the so-called *Grete Herball* of 1516 is due to a mere transposition of figures.

[Photograph by E. J. Wallis.

FIG. 93.—BRANCH OF ABIES FRASERI WITH CONES (REDUCED) FROM COLESBOURNE.

A printer's error, in fact, since nobody has ever seen a copy of it since Ames mentioned it in his *Typographical Antiquities*. Mrs. Arber* points out that *Le Grant Herbier* itself was not an original work, but as regards its text and illustrations was derived from earlier sources.

I may refer to another of these old Herbals which I have not been able to trace, that is, a Flemish one called *Groote Herbarius*, printed by Claes de Grieve, 4to, Antwerp, 1514. Probably this, too, owed its origin to the same source as the English and French editions.

Leonard Mascall's *A Booke of the arte and maner, how to plant and graffe all sortes of trees, etc.*, the first edition being printed in London in 1572, is none other than *L'art et maniere de semer pepins et de faire pepinieres*, by David Brossard, a Benedictine monk whose book appeared twenty years before Mascall's translation. Of "Short Instructions, very profitable and necessary for all those who delight in gardening, translated out of the French into English," printed by John Wolfe, 1592, I have failed to discover the original author.

Surflet's *Maison Rustique; or, the Country Farm*, published in 1600, is, of course, Estienne's famous work bearing the title, which served for so many editions of the *Maison Rustique*. In 1616 Gervase Markham, the author of *A Way to get Wealth*, issued an English edition under the French title.

The famous John Evelyn, in 1658, issued *The French Gardiner*, a translation of *Le Jardinier François*, by Nicholas de Bonnefons, the first edition of which appeared in 1651 and the last in 1761, an important book in France, seeing that it was issued during a period which lasted for 110 years.

Evelyn, also in 1693, produced *The Compleat Gard'ner*, a translation of the famous Jean de la Quintinye's *Instructions pour les Jardins fruitiers et potagers*, 2 vols., 4to, published in 1690, two years after the death of the great Frenchman.

John Foster, in 1664, published *Le Gendre, The manner of ordering Fruit Trees*. The original of this work was by Le Gendre, Curé d'Heuonville, and was entitled *La manière de cultiver les arbres fruitiers*, being published in 1652. It was the first of a long series of high-class works by French authors on fruit culture.

Another English book, *The Art of Pruning Fruit Trees, . . .* Translated from the French original, set forth the last year by a Physician of Rochelle," dated 1685, is easily identified with *L'art de tailler les arbres fruitiers* par Nicholas Venette, médecin de la Rochelle. One edition of it appeared in 1678, another in 1683.

In 1699 London and Wise issued *The Compleat Gard'ner . . .* by J. de la Quintinye, now compendiously abridg'd."

* *Herbals: Their Origin, &c.* Camb., 1912.

The same firm also published *The retir'd Gard'ner*, in 1706, in two volumes. One of these was Louis Liger's *Le Jardinier Fleuriste*, published in 1703, and the other Gentil's *Le Jardinier Solitaire*, a work exclusively devoted to fruit culture which ran through many editions for the best part of the eighteenth century.

Simultaneously with the appearance of London and Wise's translation of these two French works, another came out bearing a lengthy title, the material part of which is *Le Jardinier Solitaire, The Solitary or Carthusian Gard'ner, being dialogues between a Gentleman and a Gard'ner*. These two French gardening books must evidently have been thought a great deal of by English horticulturists, for we find that in 1717 Joseph Carpenter published a revised edition.

Under the title of *The Theory and Practice of Gardening*, John James, in 1712, published *Dezallier d'Argenville's La Theorie et la pratique du Jardinage*, a quarto, illustrated by Le Blond, first issued in 1709, and which Bloomfield, in his *Formal Garden in England*, describes as a masterly treatise on the subject.

William Fleetwood, in 1707, brought out *Curiosities of Nature and Art in Husbandry and Gardening*. The original of this work was written by the Abbé Vallemont and published in Paris in 1750 under the title of *Curiositez de la nature et de l'art sur la végétation*.

A work by Samuel Humphreys, called *Spectacle de la Nature: or Nature Display'd*, a new edition, 1736, contains in Vol. II. a large amount of information in dialogue about flowers, gardens, cultivation and pruning of fruit trees, husbandry, and vines. The Abbé Pluche was the author of this popular encyclopaedia, which bore the French title, *Spectacle de la Nature*.

De Combes—or De Combles, for I find the name spelt both ways—wrote a *Traité de la culture des Pêchers* in 1745. Several editions, extending over half a century, appeared. There is a rare translation of it into English extant entitled *A Treatise upon the Culture of Peach Trees*, printed and sold by J. Dodsley in 1760.

From this time onward English translations from French authors become fewer, and no doubt our own gardeners were, as time went on, less dependent on the experience of our French neighbours. *C. Harman Payne.*

AUSTRALIA.

LILIES IN A SYDNEY GARDEN

I AM forwarding you by this mail two photographs [Not reproduced.—EDS.] of a plant of Lilium sulphureum grown by me at Wahroonga, near Sydney.

The inflorescence produced 16 flower-buds, and at the time the photograph was taken 13 flowers were open, but the next day two others opened, and 15 were in bloom at the same time. The stem was 9 feet 4 inches high and 5½ inches around the base.

Unfortunately I did not measure the length of the flower-buds, but, with the exception of the top bud, which would only be between 6 and 7 inches, they were anything from 8½ to 10 inches.

I have frequently had plants over 8 feet high, and one, with 9 flowers, was 8 feet 7 inches this year. Some were very slightly thicker around the base of stem than the one mentioned above, but nothing like the 5 inches mentioned by Mr. F. W. Sivers in *The Journal of R.H.S.*, Vol. XXVI. (1901), Parts 2 and 3. Perhaps the height accounts for this.

My experience is that after the flowers have been open for a couple of days, a very hot, scorching sun will slightly burn the back of the edges of the blooms, but not sufficient to spoil their beauty.

The soil of the bed in which my plants were grown is composed of leaf-mould, sand, burnt earth and rubbish, dried roots, and loam, but I think our climate (we are 620 feet above sea-level) has the most to do with success, and is particularly suitable to this Lilium, as bulbils, only two years old, grow over 5 feet high, and many have produced a single flower this year.

Established bulbs of L. sulphureum may be depended on to show above the ground each year without varying one week in time. They are always in sight from October 24 to 31, and in full bloom by the third week in January.

I had very fine success with L. speciosum roseum this year; one bed contains 36 plants, some of which were 7 feet high, with up to 21 flowers on a stem. This Lilium does well here if not disturbed.

My bulbs of L. speciosum rubrum, L. s. album Kraetzeri, and L. s. Melpomene do not do very well, but I attribute this to never yet having been able to get good bulbs—in fact, I have not had much success with any of the Japanese bulbs. The best I have done with L. auratum is to grow a plant 7 feet high with 13 flowers. *A. P. Sparke, Sydney.*

The Week's Work.

THE KITCHEN GARDEN.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey

SWEDE TURNIPS.—The garden Swede is a valuable addition to other vegetables for winter and spring use. Sow a few rows on rich ground which has been liberally manured with farmyard dung. Use the hoe freely between the drills during the summer to encourage the Turnips to make free growth and to keep the ground clear of weeds.

ONIONS.—Thin maincrop Onions as soon as the plants are advanced sufficiently, and take the opportunity to remove all weeds that are present. Do not thin the plants severely unless extra large bulbs are required. Where the Onion maggot is troublesome, the thinning should be done when the plants are small, but do not remove too many, as some may fail. Encourage the plants to make good growth by stirring the soil lightly and dusting the plants frequently with old soot in dull, damp weather. Where the seeds have germinated unevenly or in patches, the blank spaces may be filled by transplanting some of the plants when they are about 6 inches high; choose showery weather for this work. If the transplanting is done quickly and well the plants will soon catch up to those that have not been disturbed.

MARROWS.—Amateurs especially should grow Vegetable Marrows, not only because they are easily cultivated, but also because home-grown Marrows are far superior to those sold in shops. In favoured localities the plants often succeed better in the open than on special heaps of manure in out of the-way corners. A mild hotbed is an advantage for early supplies, and a sunny position should be selected. When the Marrows are grown on heaps of manure or decaying rubbish, the heap should be made in a sunny, sheltered position. If young plants are in readiness, they should be hardened off and planted out early in June, or seed may be sown where the plants are to grow; they will germinate in a few days. Long Green and Long White are the most favoured large varieties; Sutton's Vegetable Marrow and Pen-y-Byd give Marrows of medium size and are prolific croppers. The more closely the Marrows are cut, the more productive the plants will be.

THINNING AND TRANSPLANTING.—Although many early sown seeds have not germinated well, there is much thinning to do amongst seedlings, and a considerable amount of transplanting is needed. This latter operation is best done in showery weather, for when the soil is moist the plants are more easily drawn out, and those that remain quickly re-establish themselves after the disturbance. The advantage of early thinning cannot be over-estimated. Turnips need first attention; they transplant readily, but at this early season transplanting scarcely repays for the trouble. Early Carrots may be thinned and the small roots made use of, leaving the remainder 4 inches apart. Moderate sized roots are the most useful. Parsnips should be thinned to 6 to 9 inches apart. Beet is not far advanced; large roots are not the best, and too much room should not be allowed. A suitable distance apart is 6 inches. Thin Salsify and Scorzonera to 6 or 8 inches asunder.

MULCHING.—Mulching is one of the most important operations at this season of the year, and especially on light soils. Immediate mulching is not absolutely necessary, especially in the case of cold, heavy soils, and may be deferred until the sun's heat has well warmed the ground. As the roots are not in a condition to receive stimulants, rich manure should not be used, yet a covering of some kind that will prevent evaporation and absorb sun-heat is needed. Peas, Beans and Cauliflowers are all improved by the timely application of mulches, and those who succeed best always err on the side of moderation, both in strength and quantity of the mulching. Clean the ground thoroughly before applying the manure, and water the roots freely in dry weather, using stimulants where necessary, according to the requirements of the crop.

FRUITS UNDER GLASS.

By W. J. GUISE, Gardener to Mrs. DEMPSTER, Keele Hall, Newcastle, Staffordshire.

EARLY VINERY.—The Grapes in the early vinery will not finish well without plenty of fresh air, but cold draughts must be prevented. Fire-heat will still be necessary to prevent the temperature from falling too low, but a close atmosphere will ruin the bloom. Leave the top and bottom ventilators open a little at night to prevent condensation of moisture on the berries. In a few weeks the Grapes will begin to ripen, and then the house should be kept cooler and drier; but the floors, bare spaces and borders should be damped in the forenoon during bright weather. Every precaution should be taken to keep the foliage free from red spider; if the pest makes an appearance, sponge the foliage with warm soapy water containing a little sulphur. Or if the syringe can be employed without wetting the Grapes, spray the foliage daily with tepid rain-water until the pest is eradicated. Vines occasionally become dry at the roots, especially in a corner or under the water-pipes, and in such cases red spider is sure to be troublesome. A good mulching of short stable manure, well watered, is the best preventive. The vines will absorb the moisture before evening if the mulch is applied in the early part of the day.

PEACHES AND NECTARINES.—The fruits on the Peach and Nectarine trees in the early houses are swelling and colouring fast; a few of the earliest varieties are even ripening. Place nets under the trellis to catch any fruits that may drop. Very few will fall, however, if the trees are examined every morning, and the ripest fruit removed with a pair of vine scissors. The flavour is much improved if the fruits are gathered just before they are quite ripe and placed in a warm fruit-room to mature. Plenty of fresh air is of the greatest importance to all fruits approaching maturity. In the case of Peaches and Nectarines, the ventilators should be left open a little at night, as the warmth in the pipes will maintain a night temperature of 60° at this period. Syringe the trees with soft water (hard water usually contains lime sediment, which disfigures the fruit), but water must be withheld when the fruit is ripening. Admit sun and air by carefully regulating the shoots, pinching those that will be cut out when the fruit is gathered.

EARLY STRAWBERRIES.—The earliest plants that have occupied the shelves in vineries and Peach houses should be discarded directly the fruit is gathered. To retain these hard-forced plants would serve no useful purpose. Successional batches may be reserved for autumn fruiting, and the best of the latest plants selected for planting outside. Dip all the plants

in an insecticide or a solution of soap and sulphur before they are placed in frames to harden; in a few days they will be ready to be placed outside. Give the shelves in the houses a thorough cleansing with strong soapy water, taking extra care if red spider is troublesome.

THE ORCHID HOUSES.

By J. COLLIER, Gardener to SIR JEREMIAH COLMAN, Bart., Gatton Park, Reigate.

STANHOPEA.—Plants of Stanhopea tigrina, S. Wardii, S. Amesiana and others that require fresh rooting material should be attended to after they have passed their flowering period. Shallow Teakwood baskets form the most suitable receptacles, as their pendulous inflorescences push downwards. A layer of Fern rhizomes should be placed over the bottom of the basket for drainage, in preference to crocks. These plants resent frequent root disturbance; any requiring increased rooting space should therefore be placed in pots large enough to accommodate them for at least two seasons. In cases where the plants have sufficient root room, and the compost is in good condition, portions of the soil should be picked from the surface, and a top dressing of fresh materials applied. The plants grow best suspended from the roof in a moist, shady position in the intermediate house. They should be watered sparingly during their earliest stages of growth, but after the new pseudo bulbs begin to form they will require liberal supplies of moisture at the roots, and frequent overhead sprayings.

ACINETA.—Plants of Acineta Humboldtii, A. Barkeri and A. chrysantha are developing inflorescences, and care should be taken that the soil is not overwatered, or the flower-buds may drop. Attention should be paid to the roots after the plants have passed out of flower and new growth has commenced to develop. At that stage they should be given similar treatment to that advised for Stanhopeas.

VANDA KIMBALLIANA.—If plants of Vanda Kimballiana require attention at the roots the work should be done now, but they should not be disturbed unless it is absolutely necessary. These plants grow best in Teakwood baskets, with clean crocks for drainage purposes, and clean-picked Sphagnum moss as a rooting medium. Plants that have lost a quantity of their bottom leaves should be taken out of their receptacles to allow portions of the stems to be cut away below some of the aerial roots, so that they may be placed lower down in the baskets. Plants treated in this manner should be grown in a shady position and syringed frequently for a few weeks afterwards. This Vanda grows best when suspended from the roof rafters. During the season of active growth the night temperature should range from 60° to 65°, with a rise of 5° or 10° during the day.

PLANTS UNDER GLASS.

By E. HARRISS, Gardener to Lady WANTAGE, Lockinge Park, Berkshire.

LILIUM.—Lilium speciosum may now be placed out of doors in a sheltered position. Plunge the pots up to their rims in ashes to prevent the plants from being damaged by rough winds. This will also prevent the roots from drying quickly. The growths must be supported with neat stakes. If there is room in the pots a top-dressing of some rich material should be afforded. Spray the plants occasionally with an insecticide to prevent attacks by green or black fly. Lilium candidum has done well here this season, and has responded well to forcing. This fact is worthy of note, as it is safe to say that there will be no importation of Liliums of any kind for some time to come.

CINERARIA.—A sowing of this useful plant should be made now. The stellata type is probably the most decorative of all the Cinerarias, and as there are both tall and dwarf forms of this type, a good batch of it should be grown. Sow the seeds in shallow pans filled with a finely sifted compost of loam, leaf soil and sand. Carefully water them with a fine rose can, and place them in a cool house to germinate. Place a sheet of glass over the pans, and keep them shaded till the seedlings are through the soil. Cinerarias should be grown in cool conditions during all stages of growth. Another sowing may be made next month to obtain plants for later flowering.

HIPPEASTRUM (AMARYLLIS).—Hippeastrum plants which have flowered should receive every attention to enable them to perfect their growth. Use a stimulant at every alternate watering, and never allow the roots to suffer for want of water until growth is completed. Water should then be gradually withheld and the plants exposed fully to the sunshine.

FUCHSIA.—Young Fuchsias which were rooted last autumn or early this year may be stopped if they are intended for bushy specimens, but those required to grow under the roof of the greenhouse should be kept growing freely in a moist, warm atmosphere, and all side shoots removed until they have grown tall enough for the purpose. They may then be allowed to develop side shoots. The same remarks apply to those intended for training as standards. Old, established plants need liberal treatment in watering and feeding when in active growth, or their flowering season will be short. Fuchsias need very little shade except when they are in full flower.

HYDRANGEA HORTENSIS. If the blue variety of the common Hydrangea is watered with the preparation "Azure," it will intensify the colour. The ordinary varieties are developing their flowers, and must be given plenty of stimulants. See that each flowering shoot is securely fastened to a stake, or the flowers will be damaged when moving the plants.

ASPIDISTRA. The principal object to aim at in the cultivation of Aspidistras is to secure good variegation in the leaves. Growing the plants too much in the shade and over potting them will defeat this object. The plant will thrive for many years without repotting, provided the drainage is kept free, the roots well watered, and given plenty of nourishment. If repotting is necessary, use a rich compost, and pot very firmly. Afterwards grow the plants in a light house, shading them only during the hottest part of the day.

THE HARDY FRUIT GARDEN

By JAS. HUDSON, Head Gardener at Gunnersbury House, Acton, W.

AUTUMN RASPBERRIES. The young shoots, if too numerous, should be thinned to the required number for training. If stray suckers appear pushing up out of place cut them off. Should any immediate increase of the stock be needed the superfluous young suckers may be transplanted. I have done this in the spring with the Hailsham berry quite successfully, and fruited the plants the following autumn. This is one of the most prolific varieties with us on our shallow soil.

PROTECTION.—There is in some districts a scarcity of netting for protecting fruit, and therefore supplies should be secured in good time. Square meshed netting is far superior to the old diamond shaped mesh. Not only does it hang better, but it goes much farther. If it is intended to rest on the fruit, the light make is best, though it is not quite so durable. It is a good plan to fix stakes over all bush fruits and Raspberries. The stakes should be made out of quartering, 3 inches by 4 inches, or 3 inches by 3 inches, at least 6 feet 6 inches long, and, when pointed, should be tarred for 18 inches from the base. There is no better plan for covering Strawberries than by this method. A stake at every 12 feet or so, with stout yarn strained over the top each way, will easily support the netting.

GATHERING AND PACKING FRUIT.—Dessert fruit should be picked into square punnets and sent straight to the table without further handling. Packing for transit must be more carefully done. Boxes into which the square punnets will fit, without room for movement, are to be had from makers who specialise in such things.

NEWLY GRAFTED TREES.—Grafts inserted this spring should be examined; if the clay is cracking, moisten it occasionally, or lay a little moss upon it. Look to the young shoots where they are on the move, and see that no insect attacks them and deforms the young growth. Do not let the stock increase its growth so much as to rob the scion.

CHERRIES.—Cherries in favourable positions have already set freely. Do not let the trees suffer for want of water; this may not happen yet in the open, but close to walls there is danger of drought. Cherries should never be permitted to become dry at the roots, especially when the fruit is swelling.

THE FLOWER GARDEN.

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

THE ROCKERY.—Iris stylosa, which usually is shy to bloom, has done well this season, and Primula Juliae, one of the showiest of rockery plants, has been as gay as in former years. Much work needs attention, such as cleaning off the decayed flowers of the earlier plants and destroying weeds which are making their unwelcome appearance, especially where fresh soil was introduced early in the year. Weeds should never be allowed to gain a firm footing in the rock garden.

ANNUALS.—Early-sown hardy annuals are ready for thinning. On light soil it will prove beneficial, after destroying the superfluous seedlings, to tread the ground around those left. The great majority of annuals transplant readily, and use may be made of these to fill any gaps that have been overlooked or where there have been failures of seeds to germinate.

AFRICAN MARIGOLD.—The African Marigold is of great value for transplanting in autumn when in flower to fill parts of borders which were occupied by earlier flowering plants. This practice has another advantage, inasmuch as doubles may be kept apart from singles. Not that the latter are less to be commended than doubles, but the two types are best kept apart from a decorative point of view. They all require a space of about 18 inches to permit of their full development.

CHRYSANTHEMUMS.—Surplus stocks of early Chrysanthemums may be treated similarly to Marigolds, and for the same purpose—filling gaps in autumn. They require rather more space, and should be very firmly planted, and treated with superphosphate, soot or pigeon manure, to produce a strong, hard growth.

TUBEROUS-ROOTED BEGONIAS.—The frames and houses containing tuberous rooted Begonias for the flower beds should be ventilated very freely, but the plants must be protected at night. They should always be watered in the mornings, but never profusely. So long as they do not suffer from lack of moisture at the roots, plants that are treated as above turn out much better, take hold of the soil sooner, and do not need much attention in the way of supplying them with water after being planted. Do not hurry to plant these tender flowers where late morning frosts prevail.

FLOWER BEDS.—The chief beds and borders for bedding plants that were dug or trenched in late autumn should be prepared by forking the soil and breaking any clods that still remain. Afterwards whiten the surface with a dressing of superphosphate of lime, then make the soil firm by foot trampling, and finish by stirring the surface, when it will be ready for planting. It may be remarked that superphosphate, in addition to its value as a manure, has a great and additional value in brightening the colours alike of flower and leaf.

MIXED BORDERS.—Many plants usually provided for summer flower-beds are useful to fill blanks in mixed borders. Thus Verbena venosa may be mixed with white flowered Lychnis; Agrostemma is beautiful; Lobelia, either dwarf or tall, is equally suitable; Gazania splendens, Ageratum mexicanum, tall Snapdragons, Tagetes signata, T. lucida, varieties of French Marigolds, and Verbenas of sorts are others that occur to one's mind at the moment. All these plants may be massed in groups or interspersed among permanent plants with which it is known they will associate perfectly.

EDITORIAL NOTICE.

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

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

Special Notice to Correspondents.—*The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.*

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

APPOINTMENTS FOR JUNE.

SATURDAY, JUNE 8:—
Kew Guild ann. meet., Kew Gardens, 6 p.m.
TUESDAY, JUNE 18:—
Royal Hort. Soc. Coms. meet

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 56.2.

ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, *Thursday*, May 23, 10 a.m. Bar. 30.0; temp. 65.5°. Weather—Rain

American Gooseberry Mildew.

After one or two years' comparative quiescence American Gooseberry mildew has made its appearance in a severe form in some parts of the country, and, indeed, some half-formed berries from one district appeared more like Snowberries than Gooseberries, so covered were they with the summer stage of the fungus. It is to be feared, therefore, that unless the present happy turn in the weather effects a change for the better, we may be about to experience another bad year so far as this disease is concerned. This is the more to be deplored in that the Gooseberry is a fruit specially valuable to the jam makers, presumably because of its richness in the pectins which give a set to jam. It is therefore to be hoped that everybody who grows Gooseberries will recognise the duty of spraying the bushes immediately. Mr. Salmon and his colleagues at Wye College have shown that, for most varieties at all events, lime sulphur is an effective wash, and Dr. Horne's trials at Wisley indicate that the disease may be controlled by a Burgundy wash—although, as is the case with lime sulphur, certain of the more delicate varieties of Gooseberry are apt to be defoliated as a result of spraying. The point, however, which should be borne in mind by all growers is that the more generally is spraying practised the better is the chance of checking the spread of the disease. Scarcely less important is the fact that the spores may be carried long distances on the clothes of persons walking among diseased plantations, and thus carried may—all unconsciously on the part of the carrier—infect distant plantations. The waxing and waning of this disease in different years is as interesting as it is puzzling. It looks as though climatic conditions had the casting vote in determining whether or no the disease should declare itself. But if this is the case, it will probably be found that the quickest way to rid the country of the pest will prove to be by spraying in the mild years no less than in the virulent years. For it is likely that in the mild years small unobserved outbreaks occur, and that the crop of spores produced by these unnoticed outbreaks suffices to sow enough "tares" in the form of resting spores to produce serious effects so soon as a mild year is followed by one in which the climatic and seasonal conditions make for virulence; that is, favour the growth of the fungus as compared with the plant. Systematic exploration of Gooseberry plantations in years noteworthy for the lack of disease might provide the clue to the problem of the manner in which the disease remains endemic in spite of years unfavourable to its development. It may be, of course, that the "resting" spore cases (perithecia) may lie dormant in the soil for more than a year—that, as in the case of certain seeds, some "germinate" after a relatively short interval of time, and some only after a longer period. But observation alone can settle this point, and it is one of such importance that settled it should be.

FLOWER FAIR IN TRAFALGAR SQUARE.—The National Rose Society and several nursery firms have given their support to a flower fair which will be held in Trafalgar Square during the week June 20-26, with the object of securing funds for the maintenance of the "British Ambulance Committee's" motor ambulances which are attached to the French Army. Flowers will be sold from stalls throughout the week, and Messrs. GEORGE MONRO, LTD., 4, Tavistock Street, Covent Garden, have consented to receive gifts of flowers and fruit sent in aid of the funds. The organising secretary of the British Ambulance Committee, 23a, Bruton Street, would be pleased to give particulars to nursery firms willing to stage exhibits.

RESEARCH AT ROTHAMSTED. Mr. W. B. RANDALL, of Waltham Cross, has provided funds for the establishment of a new research post at the Rothamsted Experimental Station, and the committee have appointed Mrs D. J. MATTHEWS, M.Sc., formerly Miss A. ISGROVE. Mrs. MATTHEWS is an honours graduate of the Victoria University of Manchester, where she gained the Platt Biological Scholarship and the Dalton Biological Scholarship. She afterwards carried out important investigations at the Marine Biological Station, Plymouth. Her work at Rothamsted will include the study of some of the problems of soil sterilisation as it is now being carried out in certain types of nurseries.

FLOWERS IN SEASON.—We have received from Messrs. BARR AND SONS a collection of Tulips, representing choice named varieties of the May-flowering section. The vigour of the flowers was apparent, and the colours were magnificent.

U.S.A. GOVERNMENT TAKES OVER A SEED FIRM.—In view of the probable necessity for harvesting all kinds of seeds with the utmost economy next year, the U.S. Government has taken over the Nungesser-Dickinson Seed Company's establishment, at Hoboken, New Jersey. The price to be paid is said to be approximately $900,000. The firm is the largest of its kind along the entire Atlantic seaboard, and its annual output of seeds is therefore very great.

FLOWER POTS.—For several years prior to 1914 the garden and flower-pot industry in Great Britain was in a deplorable state owing to the cutting of prices and German commercial invasion, consisting of the organised attempt to "dump" the Teuton surplus stocks in England and, later, to introduce German pot-manufacturing machines. From the outbreak of the war, therefore, until quite recently, the supply of such pots has been considerably in excess of the demand, and nearly all manufacturers have accumulated abnormally large stocks; and even in the absence of official restriction on flower-growing a diminishing consumption of pots, due in part to lack of growers and the urgency of growing vegetables and fruit, has made but slight inroads on the surplus stocks on hand. The demand in 1916 was approximately one-fifth of the demand in 1914; the demand in 1917, one sixth. Manufacturers are therefore turning out about 12 per cent. of the usual pre-war quantity, and it is believed that the present supply would last for some time should further manufacture entirely cease. *Commerce Reports*, April 1, 1918.

HAILSTORM IN SURREY.—It is rare indeed that a hailstorm of such intensity and duration as that of Thursday, the 16th inst., visits this country. Fortunately it appears to have been singularly local, but in parts of Surrey the damage which it wrought will long be remembered. In the morning the gardens were at their fairest, and the Darwin Tulips had, after long lingering, opened themselves in full beauty. By the afternoon they were prostrate, their long and stately stems prone on the ground and the flowers battered and broken. Under the Gooseberry bushes the young berries—which may not be picked for sale—had been shot by the hail from their stems and lay in pitiable little heaps on the ground: so the trees will have had their thinning after all. Currants were treated in like wise, and Rose leaves were torn into fragments and strewn over the garden. Some of the plants of the rock garden weathered the storm unharmed. Phloxes, Aubrietias and Lithospermums took no hurt, but the Alyssums were knocked down and buried in the churned-up earth. Most curious of all was the effect of the hail on a border of Nepeta Mussinii not yet in bloom, which was, as it were, combed out like hair parted in the middle, and plastered down on either side.

KEW GUILD.—The annual general meeting of the Kew Guild will be held in the Lecture Room, Royal Botanic Gardens, Kew, on Saturday, June 8, at 6 p.m.

THE JERUSALEM ARTICHOKE.—It appears* that although a native of America, the Jerusalem Artichoke is more cultivated in Europe than in the country of its origin. Prof. COCKERELL points out the virtues of this food-plant, and statistics which he has collected show that its yield in America is high, reaching as much as 20 tons and upwards per acre.

LEATHER-JACKET AND WIREWORM.—The serious loss of cereal crops sown in recently-ploughed-up grass-land appears, according to the investigations carried out by the Food Production Department, to have been caused more by leather-jackets than by wireworm. Apart from heavy rolling and cultivation there appears to be no remedy for the leather-jacket, which, though always with us, is not generally present in such large numbers as appears to be the case this year. With respect to wireworm, a statement is sometimes made that a sure way to clear the soil of this pest is to sow Peas one year, followed by Beans the next, and it is claimed that, neither of these plants being attractive to wireworm, the pest is starved out.

* "The Girasole, or Jerusalem Artichoke: A Neglected Source of Food," by Prof. T. D. A. Cockerell, *The Scientific Monthly*, March, 1918.

We confess that we have no knowledge that this simple expedient does clear the soil of wireworm. Nevertheless, it appears to be a fact that Peas may thrive in soil infested with the pest. This, however, may be due to another cause. The Pea, when sown, sends its taproot straight down into the soil, and although the cotyledons remain in the soil the base of the stem tends to be pushed up near the surface. Presently, as the hairs of the root become infected with the nodule organism the growth of the main root is checked, and adventitious roots break out from the hypocotyl—the part of the axis near the insertion of the seed leaves. Hence, even though the main root be damaged, the spreading adventitious roots may still serve the seedling. Among the many terrible lessons taught by the war one of the most salutary is the value of knowledge as the realisation of our extraordinary ignorance of simple facts and phenomena, an understanding of which would be at the present hour of great value to the nation. The moral is obvious, and it is to be hoped that we shall "lay it to heart, so that when the opportunity arises to overcome these conspicuous and to-be-deplored gaps in our knowledge—as, for example, of the habits of leather-jackets and wireworms—may be mended. This, however, will never be done by confining the duty of discovery to a special caste of men, however well trained they may be. It can only be done if those who cultivate the soil themselves assist by keen observation and cautious trial to find out the causes of things. We shall have to organise our common-sense more than we have troubled to do in the past.

CELERY LEAF BLIGHT.—The treatment of Celery seed with hydrogen peroxide is recommended by the Board of Agriculture as a precaution against Celery leaf blight. A 20 volume solution is the best strength, but if that cannot be obtained a 10 volume solution may be used. The seed to be treated should be placed in a glass or earthen vessel and enough of the hydrogen peroxide poured into it to cover the seed completely. Stir the mass thoroughly so that all the seeds become wet. Allow the seeds to remain in the liquid for three hours, and then pour the liquid off and use it a second time if required. Spread the seed in a thin layer in the air before sowing. Do not return the seed so treated to the original packets, or some of the spores of the fungus causing the disease adhering to the paper of the packets may re-infect the seeds. If the plants become affected later, the disease may be checked by spraying with Bordeaux or Burgundy mixture. The spraying should be begun at the first sign of the disease and must be repeated if the first spraying does not check it.

WAR ITEMS.—Private JAMES S. ROBERTSON, who joined the Army in June last year, on reaching the age of 18, has died from wounds in France. Before enlisting he was in the gardens of C. E. GALBRAITH, Esq., Torregles, under Mr. W. HUTCHINSON.

—— Private MARTIN LEARMONT, Machine Gun. Corps, who was employed in the gardens of W. D. ROBINSON-DOUGLAS, Esq., Orchardton, Kirkcudbrightshire, under Mr. WILSON, has been posted as missing since March 21. He was 19 years of age.

—— Private G. PARKER, K.O.S.B., is reported missing since April 11. Prior to enlisting Pte. PARKER was gardener at Dalmonach House, Dumbartonshire, and was previously a member of the garden staff at Drumlanrig, Dumfriesshire.

PUBLICATIONS RECEIVED—***Report on Demonstration Poultry Crofts at Islay, Tiree, and Glenluce.*** By the College Instructresses. (Glasgow: West of Scotland Agricultural College.) Bulletin No. 86.—***Preliminary Report on Isle of Wight Bee Disease.*** By Joseph Tinsley, B.B.K.A. (Glasgow: West of Scotland Agricultural College.) Bulletin No. 85.—***Quarterly Journal of Forestry,*** April, 1918, No. 2, Vol. XII. (London: Laughton & Co., Ltd.) Price 2s.—***Philippine Agriculturol Review.*** Vol. X., No. 4. (Manila: Govt. Bureau of Printing.)—***The Story of the Red Sunflower.*** By T. D. A. Cockerell, Boulder, Colorado, U.S.A. Reprinted from the *American Museum Journal*, 1918.

CLERODENDRON UGANDENSE.

ONLY a few of the hundred or so described species of Clerodendron are grown in gardens, and two of the best for gardens are C. Thomsonae, one of the most beautiful of tropical climbers, and C. splendens, which may be called a crimson-flowered Thomsonae. These two species are African, as are the majority of the species. C. ugandense (see fig. 94) was described as a new species in 1909, when it flowered at Kew, where it was raised from seeds collected by Mr. M. T. Dawe in Uganda at 2,000 feet above sea level. It is quite as happy in the greenhouse as in a stove and trained against a rafter of the roof in No. 4 House at Kew it grows and flowers freely in the autumn. The peculiar merit of the species is in the colour of its flowers, which contains two shades of blue, the central, lip-like petal being violet, the other four lavender. The inflorescence is thin as compared with C. Thomsonae, and the habit of the plant is somewhat stiff. Still, twenty years or so ago some enterprising nurseryman would have sold many plants of it under some such description as "a new and beautiful blue flowered Clerodendron from the land of the Nile." Grown as a border shrub in warm temperate countries C. ugandense should be effective after the manner of Plumbago capensis. W. W.

FIG. 94. CLERODENDRON UGANDENSE: FLOWERS BLUE.

SOME OLD ENGLISH APPLES.

A FRENCH poet once asked "Where are the snows of yesteryear?" a rhetorical question which needed no answer. The Apple enthusiast sometimes asks in like manner, "Where are the Apples of our grandfathers?" The reply is that most of them exist, and curiously, tempered with patience, reveals many of them to the careful searcher. A few of these which came my way lately may be of interest to readers of the *Gardeners' Chronicle*. A good dish of Keddleston Pippin was submitted to the Fruit and Vegetable Committee at a recent meeting of the Royal Horticultural Society, and the flavour of the fruits was highly appreciated. Not much seems to be known of the origin of this variety. Hogg gives a short description of it in the 5th edition of his *Fruit Manual*, but is silent as to its history. The only reference I have found is in *The Gardeners' Magazine* for 1830, in a letter from Mr. T. Wood, of Chilwell Nurseries. In a list of table Apples he includes this variety, and says: "A Derbyshire Apple, originated (I believe) at the village from which it derives its name." It cannot have been very widely known, as it does not appear in the lists of fruits cultivated at Chiswick. However, the variety must have come rapidly into favour, as 22 dishes were exhibited at the Apple Conference in 1833. In appearance it may be described as a more golden Cockle's Pippin; the flesh is firm and juicy, very sweet, and well flavoured. This is decidedly one of the good old varieties which have been crowded out by larger but not, I think, better flavoured sorts. A very interesting fruit was sent to me from Cornwall

for naming, with the information that locally it was known as Gennet Moyle. A comparison with Hogg's description and the coloured illustration in *The Herefordshire Pomona* proved this to be correct, and I was very pleased to have met this old English variety after many years' search. This Apple dates back to Evelyn's day, and Worlidge refers to it as a "pleasant and necessary fruit in the kitchen, and one of the best cider Apples." Phillips the poet also names it in his poem on cider. It belongs to that class of Apples which root readily from cuttings, as Bradley said in 1727: "Dwarf trees, such trees as are apt to put forth roots. . . . as the Kentish Codlin, Genet Moil, and the like." In appearance the fruit is decidedly larger than that generally used for cider, and a small fruit of Maltster would much resemble it. The flavour is pleasant; I could not recognise the "sweetest honyd taste" discovered by Phillips, but poets must be allowed their licence. The name presents an interesting philological problem. Gennet was a small Spanish horse, and Moyle a mule, and a suggestion has been made that a hybrid origin is thus indicated. Recent authorities derive Gennet from the French "Jeannette," and this seems more probable. The use of Jeannette as a name for a Pear in contrast to Pear Robert, is established by a poem of the Middle Ages published by the Wharton Society, but as it is of the class called "curious" by booksellers it cannot be quoted here. Our Juneating or Jenneting is likely to be a diminutive of Gennet rather than from Joanetting, as suggested by Hogg, and the June Eating theory has long been abandoned by all competent authorities. We should, therefore, spell this Apple Genneting, or Jemeting.

A very interesting collection of Apples from an old orchard was shown by Mr. Bayley, of Revelstoke, Slough, during the autumn, at the Drill Hall, and two varieties, the Old Pearmain and Orange Pippin, attracted my attention. The name Pearmain has been used in England since 1200, and it would be extremely interesting to be able to find this original type. The fruit shown by Mr. Bayley agrees very closely to that described by Hogg, and is larger than the Pearmain type, as instanced in Adams's Pearmain, Mabbott's Pearmain, and others cultivated at the present day. I should like to think that this fruit was the variety of the 15th century, but on referring to Knight's *Pomona Herefordiensis* quite another fruit is figured as the "Old Pearmain," a cider variety, of much smaller size and quite different in colour and shape. There for the present the problem must be left. Mr. Bayley's other fruit, the Orange Pippin, was a fine large Apple of Blenheim Pippin character, rather the style of Bedfordshire Foundling, but more golden and with a redder cheek. Considering the tree from which this Apple was gathered is estimated to be over a hundred years old we may assume that from younger trees the fruits would be even larger. The Orange Pippin I have seen before is that figured by Hogg and Bull in the *Herefordshire Pomona*, known also as Isle of Wight Pippin. This is a smaller fruit, of about the size of Cox's Orange Pippin, but of flatter shape, and the eye is a deepish basin. It may, therefore, be that there are two Orange Pippins, the large one shown by Mr. Bayley after which Blenheim was named, and the smaller one, or Isle of Wight Pippin, which served us as the arch-type of Mr. Cox's seedling. In any case, Mr. Bayley's Apple seems worthy of further trial, and I am indebted to him for a few grafts for my collection.

Pine Golden Russet was very good last season, and though hardly in the category of forgotten fruits, it is one that deserves bringing to the notice of those who are more anxious for flavour than size. I much enjoyed giving fruits of this variety to some of my Apple-loving friends and watching them take the first bite. Astonishment and appreciation were happily mingled, and most of them remarked "there is nothing like it for flavour." A musked honey is the nearest I can venture to a description of its flavour. Of obvious Golden Pippin descent, it is of the Adams's Pearmain shape, and the skin a thin golden russet; it is in season from October to December. It is unfortunate that there are so many "Pine" Apples that one is apt to get the names confused, no fewer than four being included in Hogg's *Manual*. *E. A. Bunyard.*

A GARDENER-FARMER.

THE column on farm matters published each week in the *Gardeners' Chronicle* is of great interest to the many gardeners who have the dual responsibility of managing the garden and home farm, and is especially useful just now when advice on such matters is doubly needed. The writer of the notes, Mr. Edwin Molyneux, is well known as a successful gardener and able writer on gardening, and is, in addition, one of the best farmers in the country. Some impressions gained during a recent visit to Swanmore Farm may be of interest to readers. As might be expected from one whose earliest activities lay in the direction of matters horticultural, he makes a feature of commercial fruit-growing. The Apple orchard is six acres in extent. The trees are in the best possible condition, full of promise, and skilfully pruned; the yield last year was 1,700 bushels. The trees include a large number of varieties, many of which are only grown for comparison. The sorts which do best and are most prized are Cox's Orange Pippin, Lord Grosvenor, Norfolk Beauty, Ben's Red, Allington Pippin, Lady Sudeley, Cox's Pomona, Victoria, Grenadier, Mère de Ménage, Bismarck, Blenheim Pippin, and Bramley's Seedling.

Two acres of Cob nuts and Filberts give profitable returns in most seasons. The vineries which Mr. Molyneux planted about forty years since, and have long been noted for their fine Grapes are giving bunches as good as they produced a few years after planting, the promise for this year being all that could be desired.

The farm is situated in one of the most pleasant parts of Hampshire, and consists of about 300 acres, of which 600 are arable. The soil is variable, and includes a great portion of stiff and tenacious land, interspersed with soil of a lighter texture, the latter being of a chalky and stony nature. I was impressed with the high cultivation of the farm, the cleanliness of the land, the magnificent appearance of the various crops, and the fact that every particle of ground was utilised to the full. There are miles of well-kept hedges and perfectly maintained fences; the hedges do not, as is so often the case, occupy acres of valuable ground, but are kept within the narrowest bounds, yet sufficient to give shelter to crops and animals.

There are 100 acres of Wheat, and no fewer than 30 new varieties are under trial; 120 acres of Oats; 50 acres of Barley; 12 acres of winter Barley; 12 acres of Rye; 100 acres of Turnips and Swedes, 5 acres of Cabbage; 15 acres of Potatos; 10 acres of Mangolds; 2 acres of Onions; 2 acres of Sunflowers; 3 acres of Sugar Beet; 1 acre of Maize; with the usual Vetches, Sainfoin, Mustard, Clovers, grasses, etc., 150 acres of hay, and, in addition, many acres of Down land. The Down grass land shows in a very notable way the value of basic slag. Some five years ago a portion of the grass was dressed with this fertiliser, and the difference between treated and non-treated land is most marked. Where it was used, the turf is green, luxurious, and full of Clover, whilst untreated ground has a poorer looking appearance.

Sheep comprise a very valuable registered flock of Hampshire Down consisting of 400 ewes and a magnificent lot of lambs, many fit for killing. Pigs form an important item on the farm, and these are being largely increased in numbers: the favourite breed is Large Yorkshire White crossed with a Middle White boar.

Swanmore has long been noted for its splendid quality butter; the dairy cows include a herd of the pure Guernsey breed, and no fewer than 250 customers are supplied with butter.

In pre-war times fifteen pure breeds of poultry were kept, and 2,000 chickens reared annually, besides many ducks and large quantities of turkeys; no fewer than 50,000 eggs were collected yearly.

Another important industry at Swanmore is that relating to coppice work. About 20 acres of underwood is cut annually, and supplies material for 300 dozen hurdles made on the estate, 60,000 thatching spars, 10,000 faggots, the making of birch brooms, and various other uses.

Like many other land owners, Mr. Myers is having a large part of his beautiful park ploughed for the purpose of increased food production, and at the time of my visit German prisoners of war were employed at this work. *Visitor.*

HOME CORRESPONDENCE.

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

DAVIDIA INVOLUCRATA. This Western Chinese tree has produced a few flowers (floral bracts) this year at Tortworth. Three plants were purchased from Messrs. Jas. Veitch and Sons about 15 years ago. The tree now in flower was planted in the kitchen garden about 6 feet from a 12-foot wall which faces south-east. It is grown somewhat in bush fashion, but attains the height of 26 feet. *J. Banting, Tortworth Gardens, Falfield, Gloucestershire.*

THE GRAPERIES OF BAILLEUL (see p. 178).—The Grapperies du Nord were founded by M. Anatole Cordonnier, whom I have known personally for more than 30 years. M. Cordonnier was originally a manufacturer of dress material, but subsequently interested himself in the forcing of choice fruits. I doubt very much whether his Grapes ever came in quantity to the London market, as your paragraph states. One consignment was sent 28 or 29 years ago, and the result was so unfavourable that I do not think M. Cordonnier cared to repeat the experiment. The eldest son of the proprietor spent a short time at Thomson's, of Cloverfords, to gain an insight into his method of Grape growing. M. Henri Fatzer was also closely associated with the proprietor of the Grapperies du Nord and planted at least 2,000 of the vines there. M. Cordonnier paid many visits to vineries in Belgium, England, and the Channel Islands, to get hints and ideas for the most advantageous construction of his great vineries, which were a success from the first. When the French authorities saw what an important local industry had been created by its originator, they gave him the Medal of the Legion of Honour, and placed a strong protective duty on Grapes, which practically excluded the Belgian Grape growers from the French markets. *C. Harman Payne, 195, Wellmeadow Road, Catford.*

HOP-SHOOTS AS AN ARTICLE OF DIET.—"The thrifty Belgian" is credited on p. 163 with a full appreciation of the toothsomeness of the young shoots of the common Hop when well cooked. Apart from all published records of its use as a pot-herb, I can testify to its appetising qualities, both from observation and consumption. Hop tying was one of the few farming operations performed by women in East Sussex in my young days. This was effected by rushes: two or three "bines" being attached to each pole, and the rest of the shoots removed while still quite young and short. These surplus shoots, often numerous, were the perquisite of the tyers, who cooked and ate them, or sold them for a few pence the bundle. Buyers were not wanting, and, carefully cooked, in the same way as Spinach, young Hop "bines" constituted a delicacy which I would fain taste again. *W. Botting Hemsley.*

SOCIETIES.

UNITED HORTICULTURAL BENEFIT AND PROVIDENT.

May 13.—The monthly meeting of this society was held at the R.H.S. Hall on the 13th inst., Mr. Arthur Bedford in the chair. Five new members were elected. Five members were allowed to withdraw interest amounting to £18 17s. 8d., and three members over the age of 70 years withdrew the sum of £87 0s. 7d. The sum of £103 7s. 7d. was passed for payment to six nominees of deceased members. The ordinary sick pay for the month amounted to £70 7s. 8d.: State section, £22 19s. 2d., and maternity claims £7 10s.

CROPS AND STOCK ON THE HOME FARM.

Cabbage

Attention should be given to raising a good batch of healthy Cabbage plants from the seed sown in April. The Turnip fly often attacks young Cabbage plants. In a small garden preventive measures can be readily applied, but on a farm it is not such an easy matter. One of the best preventives is to cover drills or beds which have been sown broadcast with short grass cut from the lawn, completely covering the seedlings. As the grass wilts the plants push through, and when they get so far they are usually beyond the stage when they are harmed by the fly. Soot may also be applied to ward off attacks. The seed should be sown in drills rather than broadcast, as the stirring of the soil between the drills with the hoe does much to hasten the growth of the plants.

Directly the plants are large enough to handle they should be placed in their permanent quarters in rows 2 feet 6 inches wide, the plants 2 feet apart. Choose dry weather for planting, as slugs are not nearly so troublesome to the plants as they are when planting is done during showery weather.

The Apple Orchard

Apple blossom this year is thin, excepting on trees that had but a thin crop last season. Where the trees are growing thickly together do not dig the ground between them but keep the surface free from weeds. If this has not hitherto been done, have the surface cleaned, raking the weeds and grass in heaps to dry. When the heaps are thoroughly rotted, they can be again spread over the surface, but it will be as well first to apply a dressing of Peruvian guano at the rate of 12 cwt. to the acre, basic slag 8 cwt., superphosphate 6 cwt. The present may not be the best time to apply these stimulants, but better now than not at all, and most trees need assistance after their heavy crops of last year.

As yet there are few signs of caterpillars or green flies attacking the leaves or flower-trusses, but it is wise to spray the trees as a preventive before the blooms burst.

Newly planted trees that are showing blossom should receive every encouragement to make growth freely by surface stirring of the soil and removal of all blossom.

Wireworm in Oats

There is still time to apply remedies to check the ravages of wireworm in late-sown Oats, of which there is a considerable acreage, especially on newly broken up grassland. Firmness of soil is a protection against wireworm, but newly-ploughed grass land cannot be made sufficiently firm to resist an attack, for as the turf decays it subsides, leaving hollow places. The best remedy is so to accelerate the growth of the Oat plant to enable it to get beyond the stage of attack. Nothing aids the growth so much as nitrate of soda or sulphate of ammonia sown evenly over the plot at the rate of 1 cwt. per acre.

Onions

Onion seed has germinated remarkably well, and especially under glass, this spring, quite 98 per cent. The plants from the March sowing in the open look well. Surface stirring of the soil and a light dusting with soot will be an advantage, accelerating growth, which is all in favour of early ripening of the bulbs. The advantage of sowing the seed in boxes in cold frames is apparent. This system is being commonly applied. Apart from the question of labour, the method possesses many other advantages, such as the assurance of an even plant, an early start, larger bulbs, and a prospect of escaping the Onion maggot.

The land having been thoroughly prepared, all that it needs now is to harrow it over or cultivate the surface to get rid of weeds, that rapidly spring up at this season. When the plants are large enough to handle they should be dibbled in rows made one foot apart, putting the plants 4 inches asunder in the rows, taking care that the bulbs are not buried, but making the roots quite firm in the soil.

Maize.

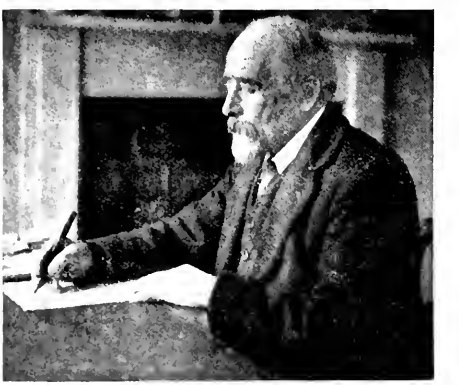
A difficulty is being experienced in obtaining the Giant Horse Tooth variety of Maize, which is the best to grow for cattle, as giving the heavier bulk of food. I am now growing Giant Virginian. Maize does not require any difficult preparation of the land. Any clean plot will suffice. If farmyard manure can be spared plough this in at the rate of 15 tons per acre, either now or in the autumn. Some drill the seed, but my experience is that this plan enables rooks to take too much of the seed when it is shallowly buried. I sow now in and after each plough furrow; that is, the rows are 8 inches wide. The seeds are strewn along some 6 inches apart. If farmyard manure was not ploughed in I sow along with the seed superphosphate at the rate of 4 cwt. per acre. The ploughing is not more than 3 to 4 inches deep, which ensures perfect safety from rooks. The surface is harrowed to produce a fairly fine tilth, and if the soil is loose a light roller is drawn over it to consolidate the whole. In three weeks' time, as the first batch of weeds show through, especially Charlock, the harrows are again drawn over to kill the weeds. *F. Wallace.*

The Vitality of Charlock Seed.

I can corroborate Mr. Macqueux's statement on p. 151 about Charlock seed lying dormant for years in the soil, and then springing up in abundance where corn crops are sown on grass land. Where the soil is good, and cultivated on the principle of a rotation, it is often left for three years in grass; yet when ploughed up and sown with Oats in March the fields are a sheet of yellow during June and July, resembling Turnips grown for seed rather than corn. In the north east of Aberdeenshire many years ago, steam ploughing made a good start, but has been doomed to failure ever since. I have been repeatedly told that this was due to the fact that the steam plough, going deeper than the ordinary one, turned up a far greater quantity of Charlock seeds, and rendered the land considerably less productive of corn than previously. The farmers bear that grudge against steam ploughing to the present day. Charlock is a bad a weed in the far north as in the south. It is known as "Skelloch" over a wide area of the northern part of Britain. The White Mustard (*Brassica alba*) is prevalent over all the lands overlying the chalk formation in Surrey and, at least, some parts of Kent, yet it never, in my observations, dominates the corn to the same extent as Charlock, even where ploughing is done by steam. Spraying for the destruction of Charlock was unknown during the period to which I refer. Spraying with copper sulphate will destroy the weed if the mixture is applied when the plant is in a young stage, the proper time being when the first rough leaves have formed. The corn crop is not harmed by the copper sulphate. *J. F.*

Obituary.

William E. Bear.—It is with much regret that we record the death of Mr. William Edwin Bear, of Magham Down, Hailsham, better known to our readers as *Southern Grower*, whose monthly notes on "The Market Fruit Garden" have been a feature of the *Gardeners' Chronicle* for several years. He passed away at his home on May 15, in his 78th year, after an illness lasting only five days. Before Mr. Bear turned his attention to horticulture he was engaged in agriculture at Thorpe-le-Soken, near Colchester, from 1864 to 1878. He had not been farming for long before he began to contribute to the agricultural Press, particularly to the *Mark Lane Express*, then the best journal of its kind. His contributions met with such a good reception that, upon the retirement of the editor, Mr. Henry Corbet, owing to ill health, he was invited to accept the position. The demands of this and other journalistic engagements made it necessary for Mr. Bear, in 1878, to give up farming and reside near London, where he remained for twenty years. During that time he reached the front rank of agricultural journalists. His most notable engagement was that of agricultural correspondent of *The Standard*, which he held for nearly twenty years. At the same time his work appeared frequently in the *Quarterly* and several other monthly reviews, also in the



THE LATE W. E. BEAR.

Journals of the Royal Agricultural, Highland, and Bath and West of England Societies. He was a regular contributor to *The Leeds Mercury*, *Agricultural Gazette*, *Live Stock Journal*, *Economist*, and *Land Agents' Record*. He established the Farmers' Alliance in 1879, and acted as its secretary during the active period of its existence. About 1893 he was appointed assistant commissioner for the Royal Commission on Labour, and in 1893-9 he visited the chief horticultural districts of the country at the request of the Royal Agricultural Society, to report upon flower and fruit farming in England for the Society's Journal. It was this latter undertaking which decided him to take up fruit-growing for market. During his residence near London gardening formed his chief relaxation, and he had considerable success in the cultivation of fruits and vegetables, but he disliked town life, and always longed to return to the country. In 1900 Mr. Bear purchased Magham Down Farm, near Hailsham, Sussex, and began to plant it with fruit trees and bushes. Gradually, as the farm gained in prosperity, Mr. Bear relinquished agricultural journalism and devoted himself entirely to horticulture. Latterly his notes for the *Gardeners' Chronicle* were practically the only journalistic work he undertook.

Mr. Bear brought a vigorous personality and remarkable energy into all that he undertook. In his relations with those who worked for him he was exacting, but was liked and esteemed for his justice.

MARKETS.

COVENT GARDEN, May 22.

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 average for the week preceding the date of our report. The prices depend upon the quality of the samples, the way in which they are packed, the supply in the market, and the demand, and they may fluctuate not only from day to day, but occasionally several times in one day.—Eds.

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

(All 48's, per doz. except where otherwise stated).

	s. d.	s. d.
Aralias	7 0– 8 0	
Araucaria excelsa	7 0– 8 0	
Asparagus plumosus	10 0–12 0	
— Sprengeri ...	9 0–10 0	
Aspidistra, green...	36 0–42 0	
Boronia megastigma	18 0–24 0	
Cyclamens	21 0–24 0	
Cinerarias	10 0–12 0	
Erica persoluta ...	36 0–42 0	
— Wilmoreana ...	30 0–36 0	
Fuchsias, arions...	12 0–15 0	
Genistas	18 0–24 0	
Heliotropes ...	12 0–15 0	
Margueritės, white	9 0–10 0	
Mignonette ...	12 0–15 0	
Pelargoniums ...	15 0–18 0	
— zonal, various	6 0– 8 0	
— ivy-leaf, various	12 0–15 0	
Roses, polyanthus	24 0–30 0	
— rambler (each)	5 0–12 0	

Ferns and Palms: Average Wholesale Prices.

	s. d.	s. d.
Adiantum cuneatum, 48's, per doz.	9 0–10 0	
— elegans ...	9 0–10 0	
Asplenium, 48's, per doz.	9 0–12 0	
— 32's	21 0–24 0	
— nidus, 48's ...	10 0–12 0	
Cyrtomium, 48's ...	8 0–10 0	
Nephrolepis, in variety, 48's ...	12 0–18 0	
— 32's	24 0–36 0	
Pteris, in variety, 48's	8 0–12 0	
— large 60's ...	4 0– 5 0	
— small 60's ...	3 0– 3 6	
— 72's, per tray of 15's	2 0– 2 6	

REMARKS.—Up to this morning very little business had been done in pot plants since last Saturday, bedding plants being most in demand.

Cut Flowers, &c.: Average Wholesale Prices.

	s. d.	s. d.
Arums—		
— (Richardias), per doz. blms	9 0–10 0	
Carnations, per doz. — blooms, best American var	2 0– 3 0	
Cornflower, blue, per doz. bunches	3 6– 4 0	
— pink, per doz. bunches ...	4 0– 4 6	
Croton leaves, per bun.	1 3– 1 6	
Gardenias, per box (12's)	4 0– 5 0	
— (18's)	2 0– 3 0	
Gladiolus Peach Blossom, per doz. bunches ...	21 0–24 0	
— white, per doz. bunches ...	24 0–30 0	
Gypsophila, pink, per doz bunches	6 0 —	
— white, per doz. bunches	12 0–15 0	
Heather, white, per doz. bun....	9 0–12 0	
Iceland Poppies, per doz. bunches	6 0 —	
Iris, Spanish, per doz. bunches—		
— white	24 0–36 0	
— blue	24 0–36 0	
— yellow	24 0–36 0	
— mauve	24 0–30 0	
Ixia, red, per doz. bunches ..	3 0– 4 0	
Lapageirias, per doz. blooms ..	3 0– 3 6	
Lilium longiflorum, long	10 0 —	
Liliums, con.—		
— — rubrum, per doz. long ...	5 0– 6 0	
— — short, per doz blooms ...	2 6– 3 0	
Lily-of-the-Valley, per doz. bun. ...	12 0–21 0	
Narcissus, double white, per doz. bun	4 0– 5 0	
— poeticus, per doz. ...	2 0– 2 6	
Orchids, per doz.— — Cattleyas ...	12 0–15 0	
Pelargoniums, double scarlet, per doz. bunches...	12 0–18 0	
— white, per doz. bunches ...	5 0– 6 0	
Pyrethrum, single, per doz. bunches	4 0– 6 0	
Roses, per doz. blooms—		
— Frau Karl Druschki ..	2 0– 3 0	
— Generad Jacqueminot ...	1 6– 2 0	
— Lady Hillingdon	1 6– 2 0	
— Ladylove ...	3 0– 5 0	
— Liberty	3 0– 4 0	
— Madame Abel Chatenay ..	2 6– 4 0	
— Niphetos ...	1 6– 2 0	
— Richmond ...	3 0– 4 0	
— Sunburst ...	3 0– 5 0	
Stephanotis, per 72 pips	3 0– 3 6	
Stock, English, per doz. bunches ..	10 0–12 0	
Sweet Peas, various, per doz. bun ...	3 0–12 0	
Viola cornuta, per doz. bun. ...	2 6– 3 0	

Cut Foliage, &c.: Average Wholesale Prices.

	s. d.	s. d.
Adiantum (Maidenhair Fern) best, per doz. bun ..	6 0– 8 0	
Asparagus plumosus, long trails, per half-dozen	2 6– 3 0	
— — medium, doz bunches	18 0–21 0	
— Sprengeri ...	10 0–15 0	
Berberis, per doz. bun.	6 0– 8 0	
Carnation foliage, doz. bunches ..	4 0– 5 0	
Cycas leaves, per doz.	3 0– 6 0	
Ivy leaves, per doz. bunches... ...	2 0– 2 6	
Moss, gross bun ..	7 0– 8 0	
Smilax, per bun. of 6 trails	4 0– 4 6	

REMARKS.—Longer supplies of home-grown flowers are reaching the market. Double White Narcissus flore pleno, Narcissus poeticus, and double White Stock are the leading lines in white flowers. The hot weather has practically finished the Tulips for this season. A few coloured Paeonies are offered for sale. Small quantities of white bean grown Gypsophila find a ready sale. A few boxes of white and coloured Gladiolus are arriving from Guernsey. These consignments suffer in quality owing to the heat. Spanish Iris being almost unsaleable. A few Lilium longiflorum and Richardia (Arums) are selling at high prices. Cornflowers, blue and pink, and single-coloured Pyrethrums, are the latest arrivals.

Vegetables: Average Wholesale Prices.

	s. d.	s. d.
Artichoke, Jerusalem, per ½ bus.	2 6 —	
Asparagus, per bundle—		
— Continental ...	0 6– 1 0	
— English ...	0 6– 8 0	
Beans :—		
— broad, French, per pad	7 – 8 0	
— French (Channel Islands), per lb.	1 6– 1 9	
Beetroot, per cwt.	7 6– 8 0	
Carrots, new, per doz. bunches ..	6 0–10 6	
— per bag ...	8 0–10 0	
Cauliflowers per doz	5 0– 6 0	
Cucumbers, per flat	24 0–28 0	
Endive, per doz ...	2 0– 3 0	
Garlic, per lb. ...	0 10– 1 0	
Greens, per bag ...	8 0–12 0	
Herbs, per doz bun.	2 0– 4 0	
Horseradish, per bun.	2 6– 3 6	
Leeks, per doz. bun.	3 0– 4 0	
Lettuce, Cabbage and Cos, per doz	0 6– 4 0	
Mint, forced, per doz. bun ...	3 0– 4 0	
Mushrooms, per lb.	1 0– 2 0	
Mustard and Cress, per doz. punnets	1 0– 1 3	
Onions, Egyptian, per cwt. ...	60 0–62 6	
— spring, per doz. bun.	3 0– 4 0	
— Valencia, per case (4 tiers) ...	44 0–52 0	
— — (6 tiers) ...	44 0–52 0	
Parsley, per bus. ...	4 0 —	
Parsnips, per bag...	8 0–10 0	
Peas, per lb. ...	1 6– 2 0	
Potatos, new, per doz lb.	3 6– 4 0	
Radishes, per doz. bunches ...	0 6– 2 0	
Rhubarb, natural, per doz.	8 0– 9 0	
Shallots, per lb. ...	0 9– 1 0	
Spinach, per bus....	2 6– 4 0	
Swedes, per bag ...	5 0 —	
Tomatos, per lb. ...	1 6– 2 0	
Turnips, per bag ...	7 0– 8 0	
— new, per doz. bunches ...	6 0–10 0	
Vegetable Marrows, per doz.	9 0–10 0	
Watercress, per doz	0 8– 0 10	

Fruit: Average Wholesale Prices.

	s. d.	s. d.
Dates, per box ..	1 0– 1 8	
Figs, Worthing, per doz ...	5 0–12 0	
Grapes :—		
— Black Hamburgh, per lb ..	2 6– 5 0	
— Muscats per lb.	4 0–10 0	
Lemons, per case...	63 0– 65 0	
Melons (each) ...	3 6–10 0	
Melons, con.—		
— cantelupe (Continental)	15 0–30 0	
Nectarines, per doz	18 0–24 0	
Oranges, per case	120 0–140 0	
Peaches, per doz ...	6 0–30 0	
Strawberries, forced per lb. ...	3 0– 8 0	
Walnuts, kiln dried, per cwt. ...	120 0 —	

REMARKS.—Owing to the warm weather, fruits and vegetables grown indoors are more plentiful. They include Strawberries, Melons, Peaches, Figs, Nectarines, Black and White Grapes, Dwarf Peas and Beans, Broad Beans, New Potatos, Tomatos, Vegetable Marrows, Mushrooms, and Cucumbers. Asparagus from all well-known sources is plentiful, cheap, and good. Outdoor vegetables and roots are more scarce. Salads are plentiful and moderate, but Lettuces are rather dear.—*E. H. B., Covent Garden Market, May 22, 1918.*

DEBATING SOCIETIES.

BATH GARDENERS'.—Mr. T. Perfect (chairman) presided at the monthly meeting of the Bath Gardeners' Debating Society at the Foresters' Hall, on the 13th inst., when a paper was read by Mr. J. Boulter on Diseases of the Potato. Mr. Boulter stated that the Potato disease reached this country from America in the early forties, and visited Ireland in 1847.

GARDENING APPOINTMENTS.

Mr A. Grant, as Gardener to Mrs. Smith, Finches, Landfield, Sussex.

Mr J. P. Hall, as Gardener to H. Coleman, Esq., Greystoke, West Didsbury, Manchester.

Mr. William Hutchinson, recently Gardener to C. E. Galbraith, Esq., Terrugles, Kirkcudbrightshire, as Assistant Ground Officer at H.M. Factory, Gretna.

CATALOGUE RECEIVED.

Australia.

C. A. Nobbles & Sons, Gumbrook Nurseries, Emerald, Victoria, Australia.—Fruit trees.

ANSWERS TO CORRESPONDENTS.

French Journals. *J. B. M.* Probably the papers which will best serve your purpose are the *Revue Horticole*, Rue Jacob, 26, Paris 6e; and *Le Jardin*, 84, Rue de Grenelle, Paris, but they are not weekly journals, both being published for the present only once a month. *L'Horticulture Française*, 6, Rue du Débarcadère, Paris, is a trade market gardening journal, but only appears four times a year, at somewhat irregular intervals.

Fungus Growth on Bottled Cherries: *Correspondent.* The foreign growth on the top of your preserved Cherries is the sterile mycelium of a fungus; it cannot be named in the stage you send.

Lettuces Injured: *Allotment.* Creosote fumes are very destructive to plant life, and it is highly probable that the fumes of the creosote have caused the damage to the Lettuces, especially as the injury is purely external, the heart of the plants being perfectly sound. As regards the Currant bush being unaffected, this is easily to be understood, as, when the fence was first dressed, the leaves had not developed, and the bark would protect the shoots from the fumes. By the time the foliage was fully expanded the fumes would, to a great extent, have passed off into the air.

Liliums Unhealthy: *S. E.* The trouble is not due to the fungus Botrytis or other organic disease. The diseased condition is probably the result of the inclement weather of early spring, when cold north and north-east winds prevailed.

Military Service: *G. W.* You could appeal on the grounds of being a food-producer, but the tribunal will not be bound to exempt you on these grounds. If your application fails, however, you can ask permission to appeal.

Names of Plants: *H. White.* 1, Artemisia absinthium (Wormwood); 2, Tanacetum vulgare (Tansy); 3, Melissa officinalis (Common Balm); 4, Marrubium vulgare (Common White Horehound); 5, Origanum vulgare (Common Marjoram); 6, Tanacetum vulgare crispum (Crisped Tansy); 7, Mimulus glutinosus (sometimes named Diplacus glutinosus); 8, Rochea coccinea (sometimes named Kalosanthes coccinea); 10, Erlangea tomentosa; 12, Impatiens Holstii; 14, Begonia Gloire de Sceaux; 16, Ficus Parcellii. *W. L., Kettering.* Rehmannia angulata. — *Edwin Dunham.* 1, Rhododendron grande; 3, Lonicera tatarica.—*E. A. E.* Ornithogalum arvense; 2, Exochorda grandiflora; 3, Phillyrea media; 4, P. angustifolia; 5, Amelanchier canadensis; 6, Spiraea chamaedrifolia.

Protected Occupations: *T. L. I.* Apply to your local National Service Tribunal, or write direct to the Ministry of National Service, Hotel, Windsor, Victoria Street, S.W. 1.

Pruning Lilacs: *T. H.* Lilacs do not need pruning in the usual sense of the word, but your plants badly need thinning of their shoots. Remove all small, weakly shoots now, leaving only the strongest and best-placed. Some of the weaker of the older wood should also be cut out. After doing this give the roots a good dressing of manure and plenty of water during dry weather. Free flowering next year depends on the development of strong, well-ripened wood made in the present year, and only drastic thinning out of the weaker wood will ensure this result.

Red Spider on Peach Trees Indoors: *Rushbrook.* Syringe the trees freely with clear water. The pest spreads rapidly in hot, dry conditions.

Scaring Birds from Cherries: *E. A. P.* As your trees are too large to net, and you do not wish to use a gun, we would suggest that you purchase a mechanical sound-scare, of which several makes are to be had from the horticultural sundriesmen.

Tenants' Rights: *G. B.* Unless you have a clause in your lease expressly permitting you to remove plants, including fruit trees, from your garden when you leave the cottage, you are not legally entitled to do so, nor can you claim any compensation for the work and material's you have expended in enriching the garden. You can, however, remove the rock garden, if this is composed, as we assume, of rocks and stones resting on the ground, and if they were purchased by yourself.

Tulips Diseased: *C. L., K. C. A.* The bulbs are attacked by Botrytis parasitica, a common disease of Tulips. Pull up and burn all infested plants, which may be identified by small, brown, velvety patches which will be found on the stem, leaves or flowers; and sterilise by burning the soil around the place where they were growing. It will be safest to remove all the bulbs from their present position, and plant the healthy ones in ground where no bulbs have hitherto grown.

Communications Received — N. I. J. H. C.—E. M. B.—L. C. R. N.E.—W. & S.—F. S. H.—A. D.—E. H. J.—J. H.—H. & Son—J. A. B.—F. D.—Miss P.

THE
Gardeners' Chronicle
No. 1640.—SATURDAY, JUNE 1, 1918.

CONTENTS.

ILLUSTRATIONS.

AN EIGHTEENTH-CENTURY LONDON SEEDSMAN.

WHILST nearly every phase of horticulture has been written about, and in some instances extensively, there is at least one almost entirely untouched, and of which, unfortunately, most of the scanty data which did exist is no longer procurable. I refer to the business of the seedsman, who acted, in the old time as to-day, as the middle man between the grower and the consumer, but a middle man with expert knowledge. Carlyle has told us that in these days ten ordinary histories of kings and countries were well exchanged against the tenth part of one good history of booksellers. And it may be asserted with equal confidence that a good history of the seed trade and seedsmen would be as full of interest and romance as that of any other business.

The seedsman, like the bookseller, of yesterday and to-day, issued catalogues of his wares, his plants and his seeds. These lists, unfortunately, have not been preserved with the same care as those of books. They were kept for a season, perhaps till the new ones appeared, and then destroyed. Very few have survived, and these only by some curious accident; and even so, their historic interest and importance in the annals of agriculture and horticulture do not seem to be fully realised. They are, in truth, essential to any historic narrative on the development of the cultivation of the soil.

It has been my good fortune recently to discover an early 18th century seedsman's catalogue in a folio volume of pamphlets; and it is perhaps one of the earliest to survive. It is "A Catalogue of several sorts of Grass Seeds, sold by Nathaniel Powell, at the King's Head near Fetter Lane end, in Holborn, London." Nathaniel Powell is quite unrecorded in any bibliography of agriculture or horticulture, but he must have been one of the leading London seedsmen for half a century at least. Attached to the catalogue—it is really not a catalogue at all as we understand the term to-day, but a series of cultural directions which consists of four pages, foolscap size, is "A Short Account of the Improvement of Land by several sorts of Seeds," sold by the same seedsman, and this also consists of four pages, foolscap size. The format and typography of the two undated pamphlets at once place them in the early years of the 18th century. The second of the two publications contains the following interesting "testimonial" from quite the most esteemed writer of the day on gardening and allied topics: "To Mr. Powell, seedsman, Holborn. Sir, I have perused your Treatise of Grass seeds, and the Improvement of Land by them. I think it a Piece of great Use, and is perfectly agreeable to my Practice.—I am, your most humble servant, R. Bradley." Bradley died in 1732, and the catalogue must have been issued several years previously. Powell's name as a seedsman at 59, Holborn, appeared in the London directories up to 1771, and possibly a little later; my set of these is unfortunately not complete, but it disappears entirely in 1777; and it may be that the Nathaniel Powell whose death is recorded in the *Gentleman's Magazine* as having taken place at Bristol on March 1, 1773, is identical with the Holborn seedsman.

Judging from this example, the early seedsmen concerned themselves more with practical directions than with varieties of seeds in their catalogues. Varieties, it is true, were very few indeed in every branch of farm and garden produce, for the science of selection in such matters was as yet almost unknown. The catalogue deals almost entirely with "Trefoil, Clover, Sainfoin, Rye grass and Lucerne." The age was evidently one of experimenting, and from the full cultural directions it is clear that Powell was a practical man. Whilst all the crops with which he particularly deals had been cultivated for many years, it is a reasonable inference that their qualities were by no means universally recognised by English farmers. Trefoil, "otherwise called Nonsuch seeds," certainly is more a boom at present in the catalogue and lists as in other uses the writer emphasises the importance of "clean seeds" "every seed separated from the husk wherein it grows." Trefoil was especially recommended for all land "naturally kind for corn and unkind for grass" and "so planted, would be worth 30s. to 5 per acre. It would, claims Mr. Powell, make clay, chalky, rocky and hilly land worth only 10 groats an acre yield a return of from 15s to 25s. per acre." Trefoil was especially recommended for cows as producing milk in greater quantity and of better quality than anything else, whilst the butter and cheese will be of a delicate yellow colour. Its superiority over Clover grass is frequently emphasised but if "you are resolv'd to sow Clover the safest way is to mix one half of Trefoil with it." Twelve pounds were regarded as sufficient for an acre, "unless the ground be rough."

Although Sainfoin (S. Foyne or Holy hay) had been cultivated early in the 17th century, it was not until many years afterwards that it was extensively grown. In 1659 there is a record of a farmer having put down about 70 acres of it. It was still regarded askance when Powell wrote. He pointed out that it has "thriven so well and is so great an improvement on our Barren lands where others will not; it being also Natural to our *Tomorous Rusticks* not to hazard Lands that will yield them any considerable Advantage any other way, on any New Method of Husbandry: in several Places there are Pieces of St. Foyn that hath been several Years Growing on poor Lands, hath so far Improved the same that a *Noble per acre*, 20 acres together, hath been constantly worth 30s. per acre, and yet continues in good proof." In his second pamphlet Powell states that the first considerable improvement made in England to Sainfoin was in and about Northamptonshire on the most barren gravelly grounds where it yielded such valuable crops that many farmers elsewhere were induced to try it, whilst "in Kent it is in great Perfection upon chalky gravel, and it is of Extraordinary Duration in all places where it is sown, even in some Parts where it has stood twenty years it yet brings as valuable Crops as at the first." The seed being large and light, an acre of ground "can require four bushels.

Land which is not good enough for Trefoil, Clover or Sainfoin can be laid down in Rye grass (Rey or Everlasting grass), it "being proper for all clays or other cold or sowre wet fenny lands." Dry "chalky, stony lands" not worth ten groats an acre, if sown with these seeds, will be as good as pastures or meadow lands at a mark an acre "a curiously late use of the words groat" and "mark." It may be sown with Barley or Oats in the spring, or in the autumn, when the Barley or Oat stubbles should be harrowed in before the seeds are sown, "harrowing with bushes the harrow" is advised.

Lucerne, or as it was called, "La Luserne," has had quite a number of pamphlets written about it. Powell praises it as "an excellent Fodder, and by some preferred before St. Foyn, as being very advantageous to dry and barren ground." He tells us that lean horses are suddenly fat with it, and that it causes "abundance of milk as much boasts but it must be given at first with Caution." One acre, he tells us, will keep three horses all the year long. In his second pamphlet Powell devotes a paragraph to "French Furze or Goss," which he advocates sowing on sandy and gravelly soils well exposed to the sun, it making "an excellent cover for young Plantations of Wood or Timber Trees, by defending the young Plants from being injured by Cattle." He tells us further than it is sown frequently in Devonshire and Oxfordshire, and that it is worth £3 per acre when it is cut.

I have selected a few of the more salient points which suggested themselves in reading this quaint treatise of a seedsman of two centuries ago. How far or to what extent the directions set forth by Nathaniel Powell are followed to-day need not now be discussed. That these directions were the outcome of practice and close observation there can be no question. One would like to know more of Nathaniel Powell; at all events, it is a pleasure to add a new name to the list of English writers. But it was not to farm seeds alone that Powell confined his attention; for we read at the end of his catalogue: "At the aforesaid Place you may be furnished with Riga or Dantzick Flax seed, Buck or French Wheat. Also all sorts of Garden Seeds, Fruit and Forest Trees and Plants; likewise all sorts of fishing and fowling Nets, and all sorts of Tackle, at reasonable Rates." Perhaps at some future time other catalogues of Mr. Powell's activities, more especially in the way of garden seeds and plants, may be unearthed in long forgotten and neglected volumes of miscellaneous pamphlets. *Roberts.*

PLANT NOTES.

PAEONIA CAMBESSEDESII.

IN reply to Sir Herbert Maxwell's note on the above plant (p. 205), I may say that it comes from the Balearic Isles, and was introduced into this country by Miss Geoghegan, who has a charming garden in the neighbourhood of Dublin. She very kindly gave me several specimens of that interesting and rare species; it has flowered well here, and I was able to send a little of its seed some years ago to the Royal Horticultural Society, in the hope that it might be more generally known. The plant is quite hardy in this part of Ireland, and is a decided and valuable addition to the garden, as may be seen from the excellent description given by Sir Herbert Maxwell. Miss Geoghegan, I may add, has also brought to this country from the Balearic Isles the true Helleborus lividus, which was figured and described in the *Botanical Magazine*, July 1, 1903, tab. 7,903, from material supplied by her. I do not, however, know where any living specimen of the last named plant is now growing, for most, if not all of the plants, seem to have disappeared from cultivation. *John Ross of Bladensburg, Rostrevor.*

ENCEPHALARTOS ALTENSTEINII.

IN *Gard. Chron.*, September 25, 1876, p. 392, the late Dr. M. T. Masters stated that E. Altensteinii is synonymous with E. Vroomii and Zamia elegantissima of Continental gardens; according to the *Botanical Magazine*, t. 7,162 (1891) another name for this South African Cycad is E. Maranui. There are magnificent examples of E. Altensteinii in the Palm House at Kew, and the illustration in fig. 95 shows a female plant with two cones. Of the seventeen species of the genus known, all of which are African, this is the largest and most striking. It has a stem a foot or more in diameter, and leaves 5 feet long; the female cones are 16 inches long, 2½ feet in circumference, and when ripe they are bright red and yellow. The male cones, which are also produced by plants at Kew, are much smaller, being only some 6 inches long and less than 2 inches wide. A plant of this species, growing in a valley in Natal, is said to have had a trunk 16 feet and a head of five branches, each with a great rosette of leaves. There are many large examples of this Cycad in cultivation in European gardens, and at the great exhibitions, such as the quinquennials at Ghent, they are wont to be displayed (at considerable expense, for they are awkward plants to transport), to the wonder of many who were uncertain whether to look upon them as Palms or as Ferns. Dr. Masters spoke of them as "animated fossils, Rip Van Winkles of the vegetable world." They are suitable only for large conservatories. Their leaves are exceedingly durable, and they are quite easy to keep in good health.

[Photograph by E. J. Wallis.

FIG. 95.—FEMALE CONES OF ENCEPHALARTOS ALTENSTEINII.

ON INCREASED FOOD PRODUCTION.

BROCCOLI.

BROCCOLI should be planted as soon as the seedlings are of sufficient size for removal. On most soils Broccoli may be planted between rows of Potatos; should, however, ample ground be available, choose an open position where the soil has been well manured and trenched. Whichever method is followed, the soil must be rich. Broccoli succeeds best where the soil is made quite firm, and this is particularly necessary where the soil is of a light texture. Planting is best done during showery weather; if the seedlings have been previously pricked out they should be shifted with a trowel, but where they have been left in the seed-beds planting is best performed with a dibber. Plant in rows made 2 feet to 3 feet apart, according to the variety, and allow the same distance between the plants in the rows. Water the roots, and apply a top-dressing of nitrate of soda at the rate of two pounds per rod. If the Broccoli are intercropped between Potatos apply the fertiliser as soon as the Potato crop is removed. Kale, Savoys, and Brussels Sprouts should be treated in the same way, and the sooner they are planted now, the better. *James A. Pearce.*

PARSNIP CANKER.

IN an article on "Diseases of Parsnips," by Mr. A. D. Cotton, published in the *Kew Bulletin of Miscellaneous Information*, No. 1, 1918, it is stated that canker of Parsnip, or the decay of the upper part of the root in late summer and autumn, has recently been on the increase, and is responsible for serious losses. The disease is due primarily to a physiological phenomenon which causes the surface tissues to become ruptured or cracked, and not to the invasion of a fungous parasite. Decay also follows as a result of a severe injury caused by Carrot fly, slugs, and other pests, but in the areas investigated such injury was scarce. Cracking takes place during the growing season, especially if rains follow a dry period, the portion involved being the skin, i.e., the periderm and the outermost layers of the cortex. The cracks, which for the most part run horizontally around the upper part of the root but also in a vertical direction, are from ¼ to 2 inches long and gape open, exposing the soft inner tissues.

The "canker" or decay which follows is shown to be the result of the inability of the Parsnip to form a layer of cork to heal the wound. Though the outer walls of the exposed cortical cell become suberised, and few cell-divisions occur, no definite phellogen is formed, and the growth-cracks are not protected as they are in the case of Carrots, Swedes, and other fleshy roots. The suberisation of the outer walls is insufficient to exclude micro-organisms, which enter, probably by means of inter-cellular spaces and fissures due to drying, and more or less rapidly destroy the tissues of the root. Though canker is worse in some localities than others, it appears to occur in all districts if rupturing of the skin takes place. No one micro-organism specially connected with the decay has been isolated.

The conditions leading to crack-formation suggests that whilst such cracks are due to an unequal rate of growth, the inner tissues growing more rapidly than the outer, and are governed very largely by weather conditions, their formation may be favoured by certain methods of culture, namely, over-manuring, neglect of liming, and early sowing (inducing premature ripening). The variety of Parsnip grown may also be partly responsible, a form of high quality, with bulky top, abundant flesh, and small core, being very largely cultivated in the worst infected areas.

Control measures consist in rectifying the faulty methods of culture alluded to, and the use of potash and common salt with a view to retarding maturation.

In order to reduce the amount of surface-cracking and canker the following treatment is recommended:—

(1) Too rich a soil must be avoided. (2) Late sowing should be adopted. Such observations as it has been possible to make in 1917 tend to confirm growers' statements that plants from seed sown at the end of April or beginning of May suffer much less than those from seed sown in February. (3) Liming must not be neglected. As well as improving the tilth, lime acts by liberating reserves of nitrogen and potash, and its effect on the Parsnip is seen in the improved quality of the crop both in size of roots and decrease in the amount of decay. (4) A dressing of salt has been found very effective by some growers. On heavy soils 5 cwt. per acre should be applied, and on light soils up to 10 cwt. per acre may be used. The salt may act by liberating a certain amount of potash from the soil, and one of the most marked effects of potash is to retard maturation and to enable the plant to continue its vegetative growth. It is possible that this effect may extend to the phellogen (rind-producing layer) and consequently render it less liable to rup-

ture. For the same reason potash manures should prove beneficial. (5) A proper rotation should be adopted: Parsnips should never be grown for two years in succession on the same land.

CLUB ROOT OF BRASSICAS.

As gardeners are aware, club root causes serious damage to Cabbages, Savoys, Cauliflowers, Broccoli, Turnips, and other plants of the Cabbage tribe, but all are not conversant with the best means of combating the disease.

Now that many seedling Brassicas are being planted, the following particulars may be useful. In its later stages the disease is easily recognised; for when the diseased plants which have failed to grow and mature properly are pulled up the roots are seen to be swollen in large, irregular lumps. The seriousness of the disease is due to the fact that in its early stages it often escapes notice, therefore, if proper precautions are to be taken against club root it is important that the roots of all seedling plants should be examined at the time of transplantation. Any plants on the roots of which there are suspicious-looking swellings should be rejected. If such plants are used, not only will they fail to mature, they will also infect the soil and cause the disease to appear in other plants of the Cabbage tribe planted in the same or following year.

It is particularly important that a careful inspection should be made of the roots of the seedlings before they are planted. It is no less important to make sure that the soil bed in which the plants of the Cabbage tribe are raised is free from the disease. The commonest way in which the disease is spread is by transplanting Brassicas from infected soil into fresh, unaffected soil. The parasite which causes the disease is invisible to the naked eye, and is capable of lying like a dormant seed in the soil and of resuming its activity later and penetrating into the delicate hairs on the roots of young Cabbage plants.

The second point which should receive attention is that the disease is almost invariably present in soil, especially poor soil of an acid nature; therefore, before planting Cabbages or similar crops the soil should be tested. This is easily done by means of blue litmus paper, a supply of which may be purchased from any chemist for 2d. If a leaf of the blue litmus paper pressed against a moist sample of the soil to be tested and left for half an hour becomes red, the soil is acid, and should be limed or chalked thoroughly before Cabbage crops are planted in it. For light soils powdered chalk or limestone should be used at the rate of from 28 to 56 lbs. to the square rod. It may be dug in at any time. If the soil is a stiff clay, freshly slacked lime should be used at the rate of 28 lbs. to the square rod. It should be bought as quicklime (unslacked lime), spread in heaps on the soil, covered with a little earth, and allowed to remain for about a fortnight, and then spread evenly and dug in. The lime should not be allowed to come into contact with the roots of living plants, nor should it be dug in so as to come in contact with manure.

If the disease is known to be present in the soil, no plants of the Cabbage tribe should be planted in the ground until the soil has been treated with quicklime. This treatment is best carried out in the autumn, and in any case two or three weeks must elapse between the time of applying the lime and planting the crop. Care should be taken when using the quicklime to protect the face, hands, and clothes from the burning action of the lime. The lime should be spread on a still day and at the rate of 1 lb. to the square yard. The quicklime should be dug in immediately after it has been applied.

Where small numbers of seedlings are to be raised and the soil of the garden or allotment is known to be infected, the seed should be sown in soil sterilised by heating or by treatment with quicklime.

The minute spores of the fungus are often carried on the roots of diseased plants to the compost heap; they infect the soil of the heap and are carried back with the compost to the vegetable plot. Again, diseased plants are often left lying on the ground and the spores which they contain are carried back into the soil.

Should one or two plants show by their failure to thrive that there is something wrong with them, they should be pulled up, the whole plant with the soil attached to the root burnt, and the place from which the root was pulled should be treated at once with lime.

PRIMULA ELATIOR × JULIAE.

In addition to considerable variation in habit and colour of flowers, the charming Caucasian Primula Juliae has proved a prolific parent for the purpose of hybridisation. At the meeting of the Royal Horticultural Society on March 26

[*Photograph by W. Irving*

FIG. 96. PRIMULA ELATIOR × JULIAE: FLOWERS MAUVE.

1918, a hybrid of P. Juliae and the common Primrose was shown by Messrs. Waterer, Sons and Crisp, and obtained an Award of Merit under the name of P. Crispii. It had the vigour of the latter with more reniform, smoother leaves, and the fine rosy purple flowers of the former parent. On March 26 last a Primula was shown at the R.H.S. meeting under the name of Jewel, and obtained an Award of Merit. It was stated to be a cross between P. Juliae and a blue Primrose. Having compared the two plants I can find no difference between them.

At Kew this spring seedlings appeared amongst a colony of the Oxlip (P. elatior). There were two different forms; both had the reniform leaves of Juliae on long petioles, and they were slightly hairy, but while the flowers of one were mauve in colour, the other was yellow, as in the Oxlip. Thus in the plant illustrated in fig. 96 the influence of P. Juliae is seen in the leaves and the colour of the flowers, while in the other its influence is shown in the leaves only. The two hybrids were growing closely together, surrounded by Oxlips, while the pollen parent was growing a few yards away. The more vigorous of the two is the form with the mauve flowers, but the yellow hybrid has a more refined appearance. W. I.

LETTERS FROM SOLDIER-GARDENERS.

MELONS IN MACEDONIA.

We have long looked on Greece as the natural home of the Currant and other kinds of fruits, but for my part, after the war, I shall also be inclined to regard it as the home of the Melon, for never before have I seen this fruit grown to such perfection as I have seen it out here.

After an experience extending over three summers in this country, I cannot help marvelling at the ease with which the very best types of Melons are grown in the open fields, with little or nothing in the shape of cultivation; in districts sufficiently removed from the operations of war the Greek still pursues the (more or less) even tenor of his way, and is chiefly occupied during the summer months in what we should term his "market garden," where his chief products are Melons and Tomatos, the former being his most lucrative crop.

Such minor details as deep digging or manuring trouble him not at all; in fact, more often than not, an old wooden plough and a clumsy implement not unlike a manure rake, furnish his sole implements for soil tillage, and the ground is left almost in the same condition as an English gardener would leave his vegetable plot in late autumn.

The seed, which is saved from year to year, germinates with surprising rapidity in the open ground from late April onwards, and the plants produce excellent fruit during August and September. No pinching or stopping is practised,

the plants being allowed to ramble at will, while artificial pollination is a thing undreamt of; yet, on an average, each plant will produce at least half-a dozen splendid fruits, many of them as much as eight or even ten pounds in weight, of perfect shape, colour, and flavour, and more often than not, evenly netted all over.

Where there is anything in the nature of a water supply the Melon beds are usually made on a lower level than its source, and ditches are cut into which the water is diverted at intervals; but in the majority of cases water is not available, and no effort at irrigation is made, with the result that in an average season the plants will go practically the whole course of their existence without watering.

Yet, strangely enough, red spider and kindred pests are unknown, and, as I have said, the fruit finishes to perfection.

The natives seem to have only the very vaguest notion of the commercial value of the fruit, for they seldom ask more than two drachmae (1s. 3d.) for the most perfect specimens, and even then a Greek never expects to get more than half the price he asks for any of his wares, and with that he is well content. I have often bought for a shilling, or even less, Melons which I should only too well have liked the opportunity of staging at Vincent Square or at the Shrewsbury Exhibition, knowing that they would have small difficulty in holding their own in every respect against our best hot-house productions at home. *J. E. Palmer, late of Tilston Lodge Gardens, Tarporley, Cheshire.*

ORCHID NOTES AND GLEANINGS.

SOPHRO-LAELIO-CATTLEYA MRS. RICKARDS.

R. WINDSOR RICKARDS, Esq., Usk Priory, Monmouthshire, sends a two-flowered inflorescence of a brightly-coloured hybrid between Cattleya Dowiana aurea and Sophro-Laelio-Cattleya insignis (C. Enid × S.-L. Psyche). C. Mossiae and C. Warscewiczii in C. Enid give the fine form and rich colour; the latter is a bright rose with a slight violet shade. The lip is dark purplish-crimson, with yellow lines from the base. The influence of Cattleya Dowiana aurea can be traced, although the cyanic colour of the other parents has suppressed its yellow in the same manner as the scarlet of S. grandiflora and L. cinnabarina in S.-L. Psyche has been obliterated. In a good light, however, a certain glow can be perceived in the colour of the sepals and petals of the hybrid, derived, doubtless, from its red ancestors.

HYBRID ORCHIDS.

(Continued from April 13, p. 155.)

Hybrid.	Parentage.	Exhibitor.
Brasso-Cattleya Beaumont	B.-C. Cliftonii × C. Empress Frederick	Dr. Miguel Lacroze.
Brasso-Cattleya Henri Constantin	B.-C. Marguerite Fournier × C. labiata	Mons. A. Marcoz.
Brasso-Cattleya Princess Mary	B. C. Digbyano Schröderae × C. chocoensis alba	Flory and Black.
Brasso-Laelia Jester	L. Jongheana × B.-L. Jessopii	Pantia Ralli, Esq.
Brasso-Laelio-Cattleya Ivernia	B.-C. Thorntonii L.-C. Canhamiana Lady Wigan	S. Gratrix, Esq.
Cattleya Golden King var. Peter	Hardyana × Venus	Flory and Black.
Cattleya Mendoza	Fabia × Empress Frederick	Dr. M. Lacroze.
Cymbidium insigniculum	insigne × Lowianum	G. Hamilton Smith, Esq.
Laelio-Cattleya Marco	L.-C. Mona × C. Schröderae	Stuart Low and Co.
Laelio-Cattleya Sextus	L.-C. Feronia × C. Schröderae	Stuart Low and Co.
Laelio Cattleya West Point Rex	L.-C. bletchleyensis × C. Empress Frederick	S. Gratrix, Esq.
Odontioda Colinge	Odm. crispum Ethel × Oda Coronation	C. J. Phillips, Esq.
Odontioda Ernestii	Odm. Wilckeanum × Oda Charlesworthii	E. R. Ashton, Esq.
Odontioda Mira	Oda. Bradshawiae × Odm. miriam	F. Smith, Esq.
Odontioglossum Adonis	Jasper × Mars	Armstrong and Brown.
Odontioglossum Amazon	crispum × miriam	Armstrong and Brown.
Odontioglossum Cittianiara	sceptrum × Fascinator	Dr. M. Lacroze.
Odontioglossum Colret	ardentissimum × Thais	C. J. Phillips, Esq.
Odontioglossum Cyra	nitidum × Lambeauianum	C. J. Phillips, Esq.
Odontioglossum crispicello	crispum × Othello	C. J. Lucas, Esq.
Odontioglossum Cumbe	crispum xanthotes × Philippianum	C. J. Phillips, Esq.
Odontioglossum Diricinum	Dyce × eximium Warnham Court var.	C. J. Lucas, Esq.
Odontioglossum Dorcen	eximium × Empress of India	Charlesworth and Co.
Odontioglossum General Foch	Armstrongiae × Colossus	Armstrong and Brown.
Odontioglossum Marjorie	illustrissimum × Pescatorei Veitchii	Charlesworth and Co.
Odontioglossum Miguelito	Dora × Doris magnificum	Dr. M. Lacroze.
Sophro-Laelio-Cattleya Mrs. Rickards	S.-L.-C. insignis × C. Dowiana aurea	R. W. Rickards, Esq.

The Week's Work.

THE KITCHEN GARDEN.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

HARICOT BEANS.—Seed of the different kinds of Haricot Beans should be sown at once in rows made 2 feet apart in the case of dwarf varieties and 4 or 5 feet apart for climbing sorts. Choose fairly rich ground, and an open situation. None of the pods should be gathered green, but all allowed to ripen seeds for winter use. The Dutch Brown variety distributed by the Royal Horticultural Society last season has proved excellent for the purpose, and is a most valuable food for winter use.

FRENCH BEANS.—Such varieties of French Beans as Canadian Wonder may be sown now in quantity. Where possible, grow the plants in isolated rows and sow the seeds thinly. Mulch the plants and keep them well supplied with water in dry weather. Remove the lights from cold frames in which French Beans are growing, and see that the plants do not suffer from want of water at the roots.

TURNIPS.—Very early Turnips on warm borders have not done well, so that those grown in frames have been doubly useful. After this date roots from these early sowings will become tough and hot in flavour, therefore make fresh small sowings fortnightly in freely manured, well-worked ground, to ensure a rapid growth. On north and east borders, as Turnips are of the greatest value during the late summer and autumn. The drills should not be less than 18 inches apart, and the plants should be thinned to 8 inches apart in the rows. Red Globe is a useful variety for summer sowing. Early Snowball and Golden Ball are also excellent sorts for small gardens. Let the roots be well supplied with water in dry weather, and keep the ground between the rows stirred with the hoe. Both the Turnip flea and slugs may be warded off by occasional dustings of soot and lime or wood ash.

ENDIVE.—There is not much demand for Endive when Lettuce is plentiful and properly blanched. It is not, therefore, advisable to sow much seed of this salad yet, but a sowing of a good selection of Moss Curled, Green Curled, and Batavian kinds should be made in rows 12 inches apart for the curled varieties, thinning them later to the same distance in the rows, allowing 15 to 18 inches for the broad leaved varieties. Make further sowings once a fortnight, where a continual supply is required. Keep the plants well watered and the ground frequently stirred between the rows to favour quick growth and to keep down weeds.

RADISHES.—The best Radishes are those that grow quickly, and, seeing that they soon become hot and stringy, small fresh sowings should be made every fortnight on a well-manured border that has been dug long enough for the soil to have become thoroughly pulverised. The most reliance may now be placed on the red and white Turnip-rooted kinds. Seed may be sown broadcast or in drills. Where the Turnip flea is troublesome, the seedlings should be dusted occasionally with soot and lime while the dew is on them.

PLANTS UNDER GLASS.

By E. HARRISS, Gardener to Lady WANTAGE, Lockinge Park, Berkshire.

BEGONIA GLOIRE DE LORRAINE.—Continue to propagate this Begonia if cuttings are available. Late-struck plants are useful as table decorations during the winter. The earliest batch of plants should be ready for their final potting, and pots 7 inches in diameter are a suitable size. A compost formed of good fibrous loam, peat, leaf-mould, manure from a spent Mushroom-bed, and coarse sand is suitable. Grow the plants in a moist, warm house, and shade them during the hottest part of the day. Admit air through the top ventilators in the forenoons, more or less, according to the weather, but close the house early in the afternoon after thoroughly spraying the plants with rain-water. When the plants are well rooted the occasional use of diluted soot water will produce deep green colour in the foliage.

EUPHORBIA PULCHERRIMA (POINSETTIA).—Re-pot cuttings of Poinsettia which have been rooted before they become pot-bound, and keep them growing freely in a moist, warm house. If very tall plants are desired, they should be grown in a warm house with plenty of atmospheric moisture all through the summer. Grow the dwarfer plants in a cooler and drier atmosphere. Another batch of cuttings may be rooted now to obtain plants for flowering in small pots. Insert the cuttings without delay after severing them from the old plants and plunge them in a hotbed in a propagating frame. Keep them from flagging by spraying them regularly with rain-water and shading them during hot weather until roots have formed.

CALCEOLARIA.—A sowing of Calceolaria should be made now, and, if necessary, another in a month's time. Sow the seed in shallow pans containing a mixture of loam, leaf-mould, and sand. It is important to make the soil firm, or it is apt to dry too quickly. The seed of Calceolaria is very small, and must be handled carefully, or it may be sown very irregularly. It is a good plan to mix such very small seeds as those of Calceolaria with sand which has been passed through a hair sieve; it is easier then to distribute it evenly over the surface of the seed pan. The soil should be soaked with water before the seed is inserted. The seed will germinate freely in a cool temperature. Cover the pans with glass and shade the latter till the seedlings are through the soil. The Calceolaria requires cool treatment through all stages of its growth.

THE ORCHID HOUSES

By J. COLLIER, Gardener to Sir JEREMIAH COLMAN, Bart., Gatton Park, Reigate

ODONTOGLOSSUM HOUSE.—At the present time and during the summer months the inmates of the Odontoglossum house should be kept as cool as possible. Endeavour to maintain a temperature in the daytime of 60° to 65°, and 55° to 60° at night. The higher temperature should be maintained whenever the outside atmosphere stands at about 50°, but when colder, the lower one is preferable. Fire-heat should not be employed during the day, but on damp, chilly nights the hot-water pipes should be slightly warmed. This should be counterbalanced by opening the bottom ventilators a little more; the fresh air will prevent the flowers from becoming injured through condensed moisture settling on them. The house should be damped thoroughly three or four times on bright days, and the plants judiciously shaded and watered. Those not in flower should be sprayed overhead twice at intervals on sunny days, sufficiently early in the afternoon for the leaves to become dry before night. Admit air freely through the bottom ventilators on favourable occasions.

EAST INDIAN HOUSE.—Now that the amount of daylight has increased, the majority of the

plants in the East Indian House are growing and rooting freely, and the night temperature maintained by fire-heat should be advanced a few degrees—i.e., to 65° to 70° at night, and during the day when the weather is warm and bright, several degrees higher, with sun-heat. It matters little how far the temperature may rise by means of sun-heat, provided there is sufficient moisture and ventilation. Many of the occupants of this division, including such plants as Angraecums, Aerides and Saccolabiums, are developing numerous aerial roots, and the plants should be afforded only sufficient water to keep the surface layer of Sphagnum-moss in a healthy, growing condition. Some of the plants are sending forth their flower-spikes; weakly specimens that have lost many of their bottom leaves should not be allowed to flower until they have regained more vigour. Many of the dwarf-growing Angraecums, such as A. Ellisii, A. citratum, A. Leonis, A. Kotschyi, A. arcuatum, A. hyaloides, and others of this class, are starting into growth, and any necessary re-potting should receive attention. Shallow Orchid pans form the most suitable receptacles, and a compost consisting of equal parts of A 1 fibre, Sphagnum-moss, cut up rather short, leaf soil, and crushed crocks should be used, with a surfacing of clean, picked heads of Sphagnum moss. Grow the plants in the coolest and shadiest part of the house.

THE HARDY FRUIT GARDEN

By JAS. HUDSON, Head Gardener at Gunnersbury House, Acton, W.

FIGS.—Syringe Fig trees planted in borders daily in hot weather; they should be syringed at least once a day, but on two occasions will do no harm if the trees are old and woody. Regulate the shoots, taking care to preserve the coming growths, but pinch side-shoots at the fourth or fifth leaf to cause the embryo fruits to swell. It will scarcely be necessary to disbud the trees. I would rather pinch the shoots to two leaves than do this. The trees must not suffer from drought in the slightest degree. Figs are often planted on sloping borders, where rain does not penetrate at the foot of the wall in a sufficient amount for the plant's requirements. In such cases it would be advisable to apply a mulch to the border. Endeavour to get the fruits to swell early so as to have them ripe by the end of July or early in August. If movable glass copings are in use it will be advisable to take them off until the first fruits are swelling for ripening. Younger trees, or those that have been root-pruned, should be encouraged to grow rather than to mature a full crop of fruit this season. Regulate the growths of newly-planted trees, and encourage shoots to develop from their bases to have well furnished plants. Control the shoots by stopping as may be necessary. Take care that no other crop shades the trees. Figs do best when grown on borders by themselves, as in the case of outside Vine borders.

VINES.—Where hardy Vines are growing in the best possible positions their growth should now be well advanced. Stop the laterals at the second joint beyond the bunch, and do not allow more than one bunch to remain on each shoot. Disbud the Vines sufficiently to permit freedom of growth without overcrowding. Allow the leaders to extend where there is room, and if a promising young shoot appears from the base do not stop it until it has grown some 5 feet or more. Tie the lateral shoots on all the spurs to prevent them being damaged by high winds. Newly-planted Vines should be encouraged to grow freely, and should not be cropped this season. Syringe and water them freely in order to have well-established plants.

APRICOTS.—Apricot trees are growing freely, and the breast wood will need to be pinched soon. Do this, wherever possible, when the shoots are quite young. Where the fruits have set freely they may be thinned and the surplus ones utilised for preserving green. Examine the borders for watering. At this season plenty of water is essential to the rapid growth of both fruit and foliage.

CHERRIES ON WALLS.—Wall Cherries are growing rapidly, and the fruit is swelling freely; no other fruit swells so quickly as the Cherry. Do not let the trees suffer for want of water. If the crop is a heavy one weak liquid manure should be given the roots. Stop all breast wood by pinching it at an early stage of development.

FRUITS UNDER GLASS.

By W. J. GUISE, Gardener to MRS. DEMPSTER, Keele Hall, Newcastle, Staffordshire.

MELONS.—When the fruits show signs of changing colour, the supply of water at the roots need only be sufficient to prevent the foliage from flagging. If the plants are grown in pots with the stems rising a little above the rims, or planted on ridges of soil, there will be no difficulty in regulating the supply of moisture. The atmosphere, also, should be kept drier. A fairly high temperature with a free circulation of air should be maintained to produce Melons of good flavour. Water may be withheld entirely as the fruits commence ripening, and the amount of ventilation increased. The cracking of the stalks and strong aroma of the fruits are sure signs of the Melons being ripe enough for cutting; they should be cut with a piece of stalk adhering and placed in a warm, dry fruit-room for use as required. The young fruits on successional plants swell very rapidly at this season. The roots should be given warm liquid manure diluted to a suitable strength, concentrated fertilisers, or top-dressings of rich, turfy loam mixed with bone-meal. Feeding should not be done to excess, or the fruits will be coarse and bellied. Pinch and tie the laterals, allowing them plenty of room, for the production of good Melons depends largely on having plants furnished with healthy foliage. Ventilate the house freely during bright weather, but close the ventilators sufficiently early in the day to raise the temperature of the house to rise to 90° after syringing the foliage freely. Let the fruits be supported in the early stages with Melon nets or pieces of garden netting. Later plants will send out plenty of laterals that will bear female flowers, if the main shoots are pinched just before they reach the top of the trellis. The flowers should be exposed to the sun and pollinated daily. When the fruits show signs of swelling, pinch the shoots two leaves beyond them. Make a final sowing at once of varieties suitable for autumn fruiting.

CUCUMBERS.—A few Cucumber plants will produce an enormous amount of fruits over a lengthened period, provided they are not overcropped at any time. Keep the shoots pinched, and remove all unnecessary growths and foliage to permit of space for training in new shoots as the old growths become exhausted. The roots will respond to liberal top-dressings of loam and rotten manure, with occasional doses of diluted liquid manure or light sprinklings of concentrated fertilisers. The syringe should be used freely to keep the plants healthy and free from red spider. Syringe not only the plants themselves but the paths, bare spaces, and under the stages. Cucumbers need liberal supplies of clear water at the roots.

THE FLOWER GARDEN.

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

BANKSIAN ROSES.—As soon as the flowers of Banksian Roses are over the plants should be pruned. In our case this is restricted largely to thinning out old wood to give space for younger growth, which is allowed to droop freely in long shoots. Unfortunately, the winter of 1917 and last winter damaged these Roses severely, one specimen having been killed outright, and the survivors need cutting hard back in order to induce fresh growth to break from near the ground. Fortunately, Roses respond well to hard pruning, which is a ready means of rejuvenating worn-out specimens, as well as those which, like the Banksias referred to, have suffered from frost.

SCARLET RUNNERS.—When Runner Beans are ready, those intended for planting in the flower garden may be planted out. Our plants have been twice stopped, and they will be planted at 3 feet apart, a space which they will rapidly cover, after which they will need to be trimmed occasionally to prevent them from growing out of bounds, or encroaching on other plants or grass verges. I am planting 100 yards to flower, and during the earlier part of their existence the early pods will be removed, but the later ones will be left to mature to produce Beans for eating. Press the soil firmly about the balls of the plants when they are planted.

TENDER BEDDING PLANTS.—Such bedding plants as Lobelia, Ageratum, Mesembryanthemum (Ice Plant), Verbenas, and Pelargoniums (Geraniums) may be planted now, to be followed by tuberous-rooted Begonias. Besides reducing the number of flower beds here, several have been filled with hardy annuals, and instead of using tall plants, which require stakes, the remainder are being furnished largely with Pelargoniums and Begonias. As already noted, summer flowers appreciate a dressing of superphosphate, which is raked into the soil previous to planting. All will be soaked with water as they are planted, and the surface soil, when moderately dry, will be hoed and levelled round the plants. The single watering will constitute the whole water to be supplied. Because of a scarcity of labour, what "bedding" remains to be done will be largely sandwiched between other pressing jobs. None of the many vases here have been filled since 1914, more on account of the time that would have been occupied in watering than any objection to furnish them with plants.

THE APIARY.

By CHLORIS

TRANSFERRING BEES FROM SKEPS. Some times it is possible to secure a skep of bees cheaply, but if one is desirous to keep bees in the most up-to-date manner the difficulty arises how to get them out of the skep. They can be got out by a method termed "driving" which is both simple and safe. Give the bees a puff of smoke through the entrance and wait a few moments, for they will at once commence to gorge themselves with honey, which they always do when frightened. (The honey thus taken is necessary should the bees be deprived of their combs, so that they may build new ones with the wax made from the honey they take at such a time, and the honey-sac being distended makes them desirous not to use their stings. Thus they can be handled with little fear of being stung). Give them a second puff and overturn the skep, and at once puff smoke across the combs to drive the bees down. Take the upturned skep and place it in a bucket, above the skep fix a second empty one to receive the bees from that below, seeing that the contact between the skeps is perfect on one side at the ends of the comb, and tap the sides of the full one with the palms of the hands until all the bees have ascended. This operation should be performed about 7 p.m., after the bees have ceased to be on the wing, or many will be lost. The bees can then be put into a bar-framed hive fitted with sheets of foundation and wired in. To prevent loss of brood, those combs containing brood should be cut out and tied into the frames by two tapes, taking care to cut the top quite straight so that it may be brought up to the top tightly, and the bees will seal them, otherwise, should a space be left they will use it as a passageway. Those who are afraid to undertake driving may place the skep above the frames, and when the queen is below, place a sheet of queen excluder zinc over the frames. As the brood above hatches, those cells will be filled with honey, and thus the skep will become a super. Take care to pack the skep warmly and leave no open space above the frames.

SUPERING.—The great advantage of the modern hive is that the surplus honey can be stored in clean combs in which no brood has been raised, thus making the food more hygienic than is possible in the skep system. Anything suitable in size may be used, but the best supers are those containing sections or shallow frames, the former for comb honey and the latter for extracting. Undoubtedly the best flavoured honey is obtained from sections, as the delicate aroma cannot evaporate, being securely sealed in by the cappings. When glasses are used the inside surface should be slightly smeared with wax, but they are easily broken and not readily handled, nor is such comb honey readily saleable.

EDITORIAL NOTICE.

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

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

Special Notice to Correspondents.—*The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.*

APPOINTMENTS FOR THE ENSUING WEEK.

SATURDAY, JUNE 8—
Kew Guild ann. meet., Kew Gardens, at 6 p.m.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 59.1

ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, *Thursday*, May 30, 10 a.m.: Bar. 30.4, temp. 66.5°. Weather: Bright sunshine.

The Progress of Food Production.

We cannot deny ourselves a special measure of satisfaction in learning from the report of Mr. Prothero's speech at Bedford on May 25 that the great programme of increased food-production laid down some eighteen months ago is in course of fulfilment. This journal from the earliest months of the war has urged the importance of increasing the food raised in these Islands, and there can be no doubt that the agricultural and horticultural Press generally has had a considerable influence in bringing about the remarkable results which, as we understand from the President's speech, have been achieved: results which may be summed up in Mr. Prothero's statement that to-day "the acreage under Wheat, Barley and Oats is the highest ever recorded in the history of our agriculture." The part which our food supplies will play in determining the issue of the war is so momentous that this present satisfactory situation must be viewed with cautious optimism. In building up large quantities of food supplies in this country, by no means the only question to be considered is the feeding of our armies and the civilian population. These large reserves of home-grown food—if they materialise—represent a great financial asset, and no one requires to be a professional financier to realise the supreme importance of such an asset. The war necessitates on the one hand a large increase in our imports, and a no less large reduction in our exports. Freight charges have risen to a high figure, existing tonnage is insufficient for the sea-carriage of essential supplies, and therefore, even though the submarine be less menacing, the need for maintaining and increasing yet further home food production is paramount. The present danger lies in this, that those who are not fully informed of the importance of food production may be inclined to drain the land yet further of the man-power essential to production, and in particular to deprive intensive cultivation of the skilled labour without which it cannot make its proper contribution to the food supply. There are signs that those who determine who shall be taken for the Army and who shall be left on the land have not a thorough appreciation of the importance and essential needs of intensive cultivation. We trust that these signs are local, and not general, and that those whose duty it is to obtain the man-power so urgently required for the Army will not make the serious mistake of ignoring or belittling the claims of market gardeners, professional gardeners, and fruit-growers, to equal consideration with those who cultivate extensively. It only requires, on the one hand, a scrutiny of the amount of vegetable food produced by intensive cultivation, and, on the other, a knowledge of the great curtailment of imports of fruit and vegetables, for any person of average intelligence to realise that in the interests of the nation special consideration should be given to those engaged in intensive cultivation. This is true of market gardening and of fruit-growing. In the case of the latter, the situation demands that everything that is possible should be done to encourage the largest possible production of home-grown hardy fruit. By common consent the present is likely to prove a bad fruit season; so bad that it is difficult to see how the needs of the Army and of the civil population are to be met. Let no man think that fruit is a luxury. The luxuries of peace may become necessities in war, and this is the manifest case with fruit. The health of the Army depends no less on jam than on meat and bread, and on this fact the medical authorities are emphatic. Unless the fruit-grower is not only not discouraged, but actually encouraged, there is a serious risk of "jam yesterday and jam to-morrow, but never jam to-day." Unfortunately, people with a flimsy sense of humour and a lack of understanding find it difficult to take the jam pot seriously. We assure them that it must be taken seriously—that the Ministry of Food can inform them how seriously it must be taken, and that unless those who grow our hardy fruits receive the largest measure of consideration compatible with the military situation, the indispensable supplies cannot be forthcoming.

Finally, let no one think because of the truly remarkable results which have been achieved that yet further efforts in food-production are not wanted. They are, for those efforts are the surest of all insurances against war-risks.

ROYAL HORTICULTURAL SOCIETY.—The next meeting of the Committees of the Royal Horticultural Society will be on the 18th inst., in the Drill Hall, Buckingham Gate, Westminster.

THE FRUIT TREES OF BELGIUM AND FRANCE.—A suggestion has been made* by Mrs. SHERWIN RAY to the effect that a fund should be started in the United States for the purpose of replanting the devastated orchards of France and Belgium. We would recommend that if the suggestion is adopted, those organising the fund should act in co-operation with the committee established by the Royal Horticultural Society for a like purpose. It would be an admirable means of bringing together the horticulturists of the Allied countries in an enduring work of reconstruction.

* *The National Nurseryman*, U.S.A., May, 1918.

THE GARDENERS' COMPANY.—Alderman Sir CHARLES WAKEFIELD has been elected Master of the Gardeners' Company. The Wardens are Mr. P. TEOFANI and Mr. FRANCIS AGAR.

FRESH-WATER ALGAE.—Mr. W. DENISON ROEBUCK has presented to the University of Leeds a collection of microscopic slides and a library of books upon the subject of Fresh-water Algae, as the nucleus of a specialist library and collection of Algae in general. These were the property of the late Mr WILLIAM BARWELL TURNER. The value of the gift is enhanced by the fact that many of the books are illustrated by coloured drawings done by Mr. TURNER, who was a talented natural history draughtsman. The collections will be known as the "Barwell Turner Memorial," and will be available for the use of students of algological science.

MR. J. R. JACKSON.—Mr. J. R. JACKSON, late Curator of the museums at Kew, attained his eightieth year on May 26. He is the oldest surviving member of the Kew staff, as to service, though Mr. J. G. BAKER is his senior by five years. Many members of the botanical and horticultural fraternities will have pleasant memories of his active life, and congratulate him on completing his eightieth year.

THE EFFECT OF LIGHT IN HEALING TREE WOUNDS.—Experiments have been made in the Dutch East Indies on four year-old rubber trees of equal dimensions, to prove the influence of light with regard to the healing of wounds of the bark. From each tree a strip of bark and cambium, measuring 1 by 5 centimetres, was cut at a height of 1.5 metre from the ground, and the wound was covered, excepting a small opening at the bottom, with pieces of blue, green, yellow, red, and colourless glass. The best results were obtained with the blue and colourless glass; yellow glass gave the worst results, all the wounds under this becoming mouldy. It appeared also that wounds from which the rubber scraps had been removed healed more slowly than those in which scraps had been left, while the latter healed less rapidly than wounds covered with colourless glass, thus indicating that it is desirable to cover wounds on the trees as a healing measure.

AROIDS FOR CROPPING.—A correspondent in the *Philippine Agriculturist and Forester*, Vol. VI., Nos 2 and 3, records some tests made with Yautias and Gabis. This is a continuation of the work begun by QUISUMBING and OCFEMIA. These tests confirm the previous results that the Yautias (Xanthosoma sp. "Dasé Ala" Sinh.) are the most profitable as field crops. In fact, the Gabis and Dasheens (Colocasia sp. "Gahala" varieties) are shown to yield so poorly that they cannot be cultivated successfully under field conditions. To be a commercial success the yield should be at least 625 lbs. of rootstock per acre. The Colocasia sp. at their very best do not give more than 450 lbs. per acre.

JAPANESE LARCH.—A note* by Sir HUGH R. BEEVOR on Japanese Larch at Hargham, Norfolk, points out that this tree is continuing to prove resistant to canker. Of a wood of Japanese Larch 8 feet apart, scarcely ten trees show sign of the disease.

AMERICAN PLANTS.—Part LIII. of *Contributions from the Gray Herbarium of Harvard University* is entirely devoted to the description and synonymy of American plants, and chiefly to North American, by J. F. MACBRIDE and S. F. BLAKE. The discussion and application of almost absolute priority in names occupies considerable space, but it will be long before

* *Quarterly Journal of Forestry*, 2, XII., April, 1918.

the alterations find a place in horticultural literature, and still longer before they are accepted and used by gardeners. Not that many cultivated plants are concerned in this part of the publication. The Liliaceous genus Zigadenus and a long series of Chenopodiaceae come under this kind of critical revision. Fremontodendron mexicanum is reduced to Fremontia, and rightly, no doubt. Lomatium replaces Cogswellia—in spite of the familiar Lomatium and Cogswellia not long since was revived for Peucedanum! Other "new combinations" are made in favour of dates partly, and partly on modified generic limitations. Among new plants from Venezuela and Curaçao may be mentioned Hecatostemon, a new genus of Flacourtiaceae; Jacquinia mucronulata, Plumeria cochleata, and Dianthera pleurolaryux. Schismocarpus is a new genus allied to Mentzelia. It was discovered in the Department of Pochutla, Oaxaca, Mexico, where it bears the name Camote de llama. "Camote is a name for the Sweet Potato, and evidently refers to the thick tuberous [illegible] of the plant."

HEATHER BURNING. The advantages of systematic Heather burning are manifest both with respect to grazing and sporting value. As an example the case of a Scotch hill farm may be cited. By systematic burning over ten years the production of wool and lambs was increased by 25 per cent. and the bag of grouse nearly doubled. If it is to prove successful Heather-burning must be carried out according to plans laid well in advance, and should be spread over a period of years. But whatever plan is adopted its execution must be modified according to circumstances, for it is important that the burning should only be attempted during suitable weather, and that, although generally the oldest parts should be marked down for burning, any patches attacked by the Heather beetle should be burned at the earliest possible moment. Patches selected for burning should not be too large—10 acres or so is a good area, and the strips burned should alternate with unburned strips. Imperfect burning does harm to the grass and therefore burning should not be attempted unless the Heather is sufficiently dry. In England autumn burning has been practised with success, but in Scotland it has proved unsuccessful. April is the month recommended in that country. Burning should be done against the wind, as the rate and extent are more under control of the fires and beaters, and the burning being slower than it would be if done with the wind, produces better results.*

WAR ITEMS.—Mr. P. C. M. VEITCH, Exeter, has been officially notified that his son, Major LEONARD VEITCH, was killed in action in France on May 21. Major VEITCH, who was 31 years of age, had been on active service since the first day of the war, and had, with the exception of his brief periods of leave, and a short time spent in England whilst passing through his O.C.'s course, been on the Western Front since Christmas Eve, 1914. Educated at Exeter School, he afterwards went to Germany and Holland to complete his studies in horticulture and landscape gardening. Major VEITCH was mentioned in despatches for good work, and had the reputation of being a fearless and resourceful officer. The greatest sympathy will be extended to Mr. P. C. M. VEITCH, who has himself only recently left hospital, where he has been under treatment for a severe accident.

Staff-Captain JAS. O'BRIEN, M.C., elder son of Mr. JAMES O'BRIEN, has been appointed Staff Captain of an infantry brigade. Captain O'BRIEN and his brother went in the ranks of the Artists' Rifles to Flanders in October, 1914, and have been on active service abroad ever since. We are glad to learn that Lieut. JOHN O'BRIEN, King's African Rifles, has recovered from his wound of April 30.

* Leaflet No. 42, Board of Agriculture for Scotland.

THE ALPINE GARDEN.

ANEMONE ALLENII

ANEMONE ALLENII was raised by the late Mr. James Allen, of Shepton Mallet. The plant is rather taller than A. Robinsoniana, and has a little touch more of purple in its colouring; it has been described as of a more opal shade than A. Robinsoniana, and that is probably as good a description as it is possible to arrive at. There are, I believe, two forms of the plant in cultivation, the one is more compact and floriferous than the other. My plants came from Mr. Allen direct, and there can, therefore, be no dubiety as to the correctness of my stock. The variety cannot be said to be superior to A. Robinsoniana, but it is a distinct Windflower and useful in collections. *S. Arnott.*

THE DOUBLE CRIMSON POMPADOUR PRIMROSE.

THE true Pompadour Primrose has been exhibited by Messrs. R. Gill and Sons at R.H.S. fortnightly meetings this spring. It is a plant of comparative rarity, and difficulty attends its cultivation generally in southern gardens unless exceptional means are adopted. To such an extent is this true that I was once told it was almost impossible to grow the plant south of London. Even with ordinary cultivation, and in the places beloved of the Primrose, the variety is not particularly attractive. In the instances referred to the flowers were hardly of average size, and finer flowering specimens are seen occasionally among the Primula exhibits at the National Auricula and Primula Society's exhibition in London. Realising the difficulty of cultivating this beautiful flower by ordinary methods, I have more than once resorted to growing it in a frame of the crudest description, the sides being of packing cases fastened to each other, with stakes driven into the ground for supports. Of these enough to accommodate two or perhaps three frame lights, 4 feet 6 inches wide by 6 feet long, were arranged. A low-lying or cool spot was chosen for the frame, with distant tree shade. The plants were grown in a layer, one foot deep, of loam and leaf mould mixed with a third part of old cowdung; the cowding was used for its cooling nature rather than for high manurial value. Planted in this mixture and divided annually or biennially as necessary, the lights shaded if other shade was not at hand, this favourite old flower was a considerable success. The plants were watered overhead when they were in full growth; soot water or weak liquid manure was also applied overhead without stint, a treatment in which they revelled. With growth completed and the summer heat passed, the lights were removed. To treat a hardy Primrose in this manner in these days of labour scarcity would appear almost an extravagance, yet it is one of the very few ways of making this particular variety a complete success in the warmer counties of England. *E. H. Jenkins.*

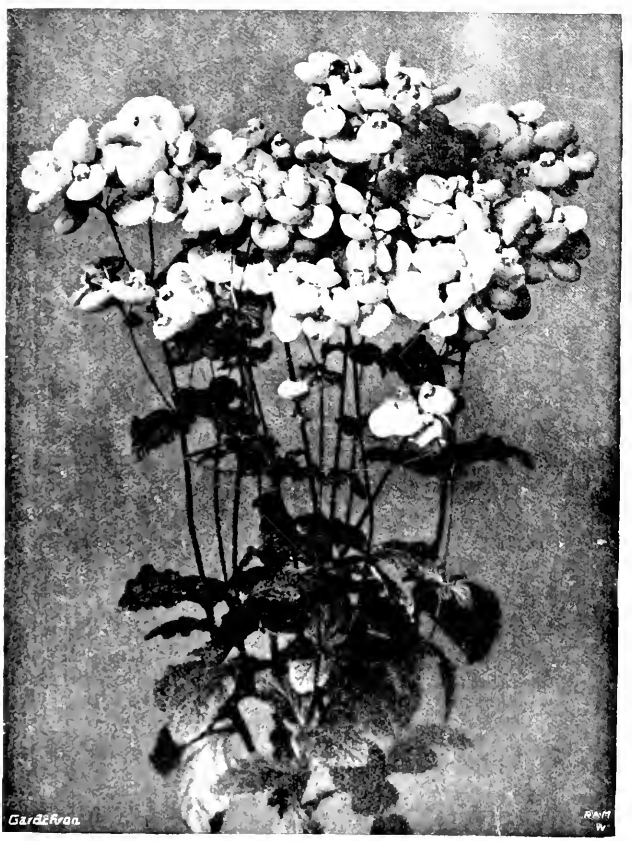


FIG. 97.—CALCEOLARIA BUELLIROSE.
(See Awards of the Floral Committee, p. 250.)

HOME CORRESPONDENCE.

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

COLOUR IN FRUITS AND VEGETABLES.—For some time past I have been studying the question of colour in fruits and vegetables, and trying to ascertain the reason why colour should be so highly appreciated in certain kinds, and its absence in others. For instance, most or all of the yellow fleshed Apples have the best flavour and quality, and are generally appreciated. Are there any white-fleshed Apples of high quality? Stewed Pears are most appreciated when they assume a more or less decided amber tint. On the contrary, coloured Potatos are chiefly cultivated and sold by nurserymen for exhibition purposes, and market growers seldom plant them. King Edward VII. is an exception, being the most popular coloured Potato at the present time. White-fleshed varieties are most appreciated, yet the yellow-fleshed tubers are mostly of excellent quality and flavour. Certain varieties, with decidedly yellow flesh, are known as Connoisseur Potatos, yet their cultivators are not numerous, although their quality is considered high. When I was a boy our people grew about a dozen varieties, most of them coloured and yellow-fleshed. The most highly appreciated had dark violet-purple skins and decidedly yellow flesh, and the only reason why they were not extensively cultivated was their susceptibility to late blight. There is more dry matter in yellow Turnips than in white ones, and still more in Swedes, with a greater sugar content, yet the cook in many private establishments must have white Turnips. Red-fleshed Beet is most highly appreciated, yet the yellow-fleshed Sugar Beet contains far more sugar. Red-fleshed Carrots, in my experience, are of better quality than yellow ones, and the latter have long been eliminated from gardens. In this instance colour rightly takes precedence. Yellow Tomatos are of good quality, and appreciated by those who know them, yet the market grower will have nothing to do with them. White-seeded Runner, Dwarf, and Climbing French Beans are by most people considered the proper and only varieties that should be grown for drying. The Brown Dutch kind seems destined to become popular for drying for winter use, and the flavour is considered excellent by those who have tried it. The Dwarf Bean, Negro Long Pod, is being grown this year for drying, and in this case the seed is black. *J. F.*

COOKING HARICOT BEANS (see p. 211).—Many will cordially agree with Messrs. Barr and Sons that these Beans would be in "general use the year round if the modes of preparing and cooking were better understood." The point in my mind is whether that desirable consummation is likely to be effected by boiling them from 1½ to 2 hours, as stated. I think not. The complete cooking of the Haricot Bean is not a question of the degree of hardness of the water only, but very much also a question of the extent to which the Beans themselves have been dried, and, as in the case of all shop-purchased Haricots, the "extent" is unknown. The soaking in cold water an essential in the case—is not likely to be overdone. The twelve hours stated should be the minimum, twice that number being generally favoured in my household. Those intended for the mid-day meal are brought to the boil at breakfast time (8 a.m.), and kept gently simmering until required for dishing up. In this way the Beans become quite tender, constituting a most delightful dish, and minus the acrobatic agility they display in restaurants and like places when only half cooked. *E. Jenkins.*

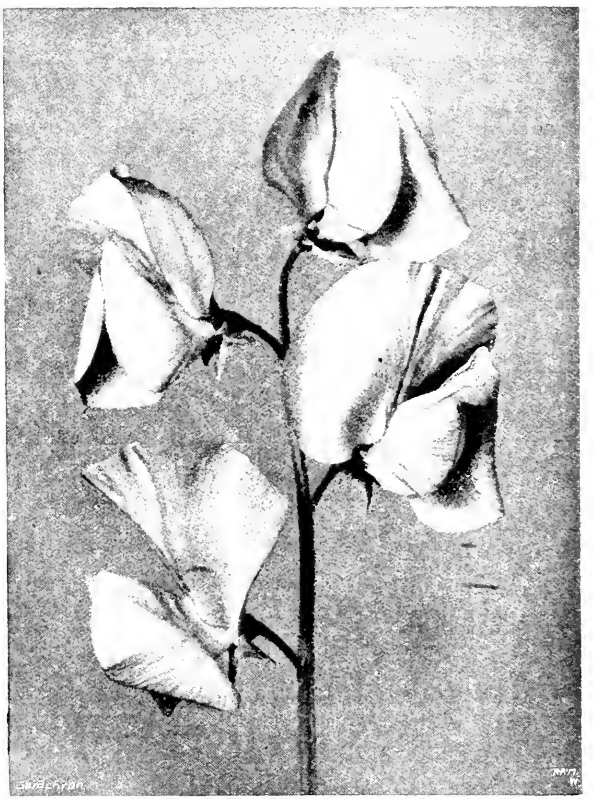


FIG. 93.—SWEET PEA MRS. J. W. BISHOP: COLOUR SOFT CERISE. (See Awards by the Floral Committee.)

CLIMBING HARICOT BEANS (see p. 210).—I advise those who intend to grow Climbing Haricot Beans to consider the following points before they make the attempt: Is the summer long enough for the Beans to mature, and is there ground to spare for a chance crop; also will Bean-sticks be available, and their cost? We may rely on Potatos, Onions, Carrots and Leeks as certain crops, but success with Climbing Haricot Beans is doubtful. Last year I grew four rows, each 40 yards long, of these Beans. I tried some of the young pods cooked green, but they were tasteless, and before a good crop of Beans had formed in the pods early frosts appeared. I do not mean to imply that the crop was a failure everywhere, but it is not worth growing as a crop for winter use by allotment holders and others who have only a little ground. *C. Davis, Holy Wells Park Gardens, Ipswich.*

SOCIETIES.

ROYAL HORTICULTURAL.

MAY 28.—The fortnightly meeting on Tuesday last, held in the Drill Hall, Buckingham Gate, Westminster, attracted a considerable number of Fellows, and there was a good exhibition. There were several fine exhibits of Orchids, and the Orchid Committee recommended one Award of Merit and one Preliminary Commendation to novelties.

There was a full attendance of the Floral Committee, and this body recommended seven Awards of Merit to novelties, and awarded seven medals to groups. Amongst the latter were a collection of Irises shown by Messrs. R. WALLACE AND CO.; Sweet Peas from Messrs. ALEX. DICKSON AND SONS, Marks Tey Nurseries; a group of well-flowered Azaleas shown by Mr. L. R. RUSSELL; and Messrs. H. B. MAY AND SONS' usual group of fine indoor Ferns, interspersed with batches of flowering plants. One or two nurserymen showed flowering branches of decorative trees and shrubs, and Messrs. G. REUTHE and R. TUCKER AND SONS exhibited Alpines and hardy flowers. Mr. G. W. MILLER had a very comprehensive exhibit of spring garden flowers, including a giant, purple Brompton Stock, for which he was awarded a Cultural Commendation. Mr. JAMES DOUGLAS' exhibit of border Carnations contained blooms of the highest excellence, and he gained awards for two new varieties. A selection of the best Perpetual-flowering Carnations was contributed by Messrs. STUART LOW AND CO. Mr. F. GIFFORD, Hornchurch, exhibited a fine batch of Paeonia officinalis lobata, a goblet-shaped flower of coral-red colour, shading to cerise at the edge. Mr. A. DAWKINS brought two new Calceolarias which attracted considerable attention; one (Buttercup) received an Award of Merit, the other, named Canary Bird, was equally floriferous, but of a less rich shade of yellow. Messrs. HERBERT CHAPMAN, LTD., staged a number of hybrid Irises, the result of intercrossing the so-called Dutch varieties.

Messrs. DOBBIE AND CO. contributed three new varieties of Sweet Pea, of which the finest was named Ivorine, a large, pale cream variety, buff tinted.

The Fruit and Vegetable Committee found very little to consider, and the only award made in this section was a Provisional Award of Merit to Apple Pershore Pippin, which resembles a russety fruit of Winter Peach.

At the 3 o'clock meeting of the Fellows an address on "Practical Meteorology" was delivered by Mr. W. M. ROBERTSON.

Floral Committee.

Present: Messrs. H. B. May (Chairman), John Green, George Paul, R. C. Notcutt, S. Morris, R. W. Wallace, W. J. Bean, G. Harrow, E. A. Bowles, G. Reuthe, J. Heal, C. R. Fielder, T. W. Barr, W. Howe, J. Hudson, J. Jennings, A. Turner, C. Dixon, J. Dickson, C. E. Shea, E. F. Hazelton, W. P. Thomson, and E. H. Jenkins.

AWARDS OF MERIT.

Calceolaria Buttercup (see fig. 97).—A hybrid from the Herbaceous Calceolaria crossed with a hardy, shrubby, yellow variety. The colour is exceedingly rich, and the plant, as will be seen from the illustration, is very floriferous. Speci-

mens grow to a height of about 18 inches, and make excellent subjects for conservatory and greenhouse decoration; they are also stated to be suitable for summer bedding. The variety is said to come true from seed. Shown by Mr. ALFRED DAWKINS.

Syringa Swegincowii superba. — This new Chinese species has a laxer spike than the common Lilac, and is, in consequence, more decorative and more graceful. The petals are white, and the tube is pale lilac-rose both sides. The petioles and young stems are tinted with rose, the leaves themselves being smaller than in the common Syringa. Shown by Mr. C. TURNER.

Carnations the Grey Douglas and Surrey Clove.—The former is a large, striking bloom of slaty-grey colour, the latter a rich shade of crimson and very fragrant. Both are border varieties. Shown by Mr. JAMES DOUGLAS.

Sweet Pea Mrs J. W. Bishop (see fig. 96 — The colour of this beautiful new variety is soft cerise, a shade popular with florists. It is likely to become a valuable market variety. Shown by Messrs. ALEX. DICKSON AND SONS.

Lupins Delight and May Princess. These two varieties were selected by the Committee for award amongst a number contributed by Mr G. R. DOWNER, Chichester. The flowers of Delight are dull carmine-lake *Rep. des Couleurs* 106, Tone 2), and the keel petals are stained with purple. May Princess is dark violet-purple, almost blue in parts.

GROUPS

The following medals were awarded for collections:—

Silver-gilt Banksian Medal to Messrs. ALEX DICKSON AND SONS for Sweet Peas.

Silver Flora Medals to Messrs. H. B. MAY AND SONS, for Ferns and greenhouse flowering plants; Mr G. W. MILLER, for hardy flowers; Messrs R. WALLACE AND CO., for Irises of the Germanica section; Mr L. R. RUSSELL, for Azaleas.

Silver Banksian Medals to Messrs. J. CHEAL AND SONS, for flowering shrubs and trees, including Rhododendrons, also Star Dahlias; Messrs PAUL AND SON, for flowering trees and shrubs; Messrs. PIPERS, for flowering shrubs; Mr G. REUTHE, for Alpines; and Mr F. GIFFORD, for Paeonia officinalis lobata.

Bronze Banksian Medals to Messrs R. TOLKEP AND SONS, for Alpines; Messrs. H. CHAPMAN LTD., for Irises; and Messrs. STUART LOW AND CO., for Perpetual-flowering Carnations.

Orchid Committee.

Present, Sir Harry J. Veitch (in the chair), Messrs Jas. O'Brien (hon. secretary), William Bolton, W. H. White, R. A. Rolfe, R. G. Thwaites, Pantia Ralli, Fred K. Sander, J. E. Shill, J. Charlesworth, W. H. Hatcher, W. J. Kaye, W. Vear Cobb, and R. Brooman White.

AWARDS.

AWARD OF MERIT

Odontioda sanderiana Beauty of Ashtead from PANTIA RALLI, Esq., Ashtead Park, Surrey (Orchid grower Mr W. H. White). A beautiful home-raised form obtained by crossing O. crispum Rossendale and O. c. Empress of India. The finely grown plant bore a spike of seven large, well formed flowers; the inner two-thirds of the segments are heavily blotched with dark purplish red, the broad white margins effectively displaying the colour. The lip is white, with dark red blotches in front of the yellow crest.

PRELIMINARY COMMENDATION

Odontioda Juno, from Messrs. ARMSTRONG AND BROWN.—A beautiful new hybrid raised from Odontoglossum eximilius and Odontioda Coronation, the seedling having much of the large size and fine substance of the Odontoglossum parent but adhering more closely to the Odontioda parent in colour, than which it is both darker and brighter. The white surface of the segments is, for the greater part, covered with large, concentric, ruby red blotches, the margin having a freckled rose coloured band. The lip is white with ruby red blotches.

GROUPS.

Messrs. ARMSTRONG AND BROWN were awarded a Silver gilt Flora Medal for an excellent group of finely-grown hybrid Orchids, including several new Odontoglossums and Odontiodas, among which were noted Odontioda Madeline Orchidhurst variety (Odm. crispum × Oda. Charlesworthii), equal in size to an Odontoglossum, and bearing a well-formed, yellowish-white flower which has many large chestnut red blotches almost covering the surface; the lip has a distinct chestnut red blotch; Odontioda Monte Rosa, of unrecorded parentage, and an improvement on the original Odontioda Vuylstekeae; Odontoglossum Aireworth Orchidhurst variety differing from the ordinary forms in having a clear white ground and distinct claret blotches and Odm. Alcibiades (crispum × Colossus).

Messrs. CHARLESWORTH AND CO. were awarded a Silver gilt Flora Medal for a fine group of Miltonias, mostly raised by them, and including many handsome forms of M. vexillaria, such as M. v. Lycth and varieties of M. Charlesworthii with bright rose flowers having a deep ruby crimson mask on the lip. With them were arranged many handsome blotched Odontoglossums and several of the clear white xanthotes forms of O. eximium and O. crispum, together with brilliantly coloured Odontiodas.

PANTIA RALLI, Esq., exhibited Odontoglossum crispum Masterpiece, a seedling plant bearing a spike of thirteen clear white flowers.

H. T. PITT, Esq., Rosslyn, Stamford Hill, gr. Mr Thurgood, showed a strong specimen of the rare Bulbophyllum Balfourianum, with a short cluster of four singularly formed flowers, the ground is cream white spotted with claret red, the inner parts of the segments claret red. In colour, substance and odour the species calls to mind some of the Stapelias. The species was illustrated in *Gard. Chron.*, July 24, 1915, p. 53.

WALTER CORBE, Esq., Normanhurst, Ristol (gr. Mr C. J. Salter), showed cut spikes of Dendrobium Lyonii, Odontioda Bradshawiæ, Cobb's variety, and a handsomely blotched Odontoglossum.

Messrs J. AND A. MCBEAN, Cooksbridge, showed a fine specimen of Dendrobium Sanderæ.

Messrs. STUART LOW AND CO., Jarvisbrook, Sussex, were awarded a Silver Flora Medal for an effective group of Cattleyas and Laelio-Cattleyas, Odontiodas and Odontoglossums. The finest of the first named was Odontoglossum Phipsoni of rare colouring, the plant bearing a spike of [illegible] flowers.

Sir JEREMIAH COLMAN, Bart. (Gatton Park, — Mr C. [illegible]), submitted four flowers of their Odontoglossums for the remarks of the Committee as to their improvement. The largest, shown "The flowers handsomely marked, was referred to O. Landsborough, a most probable extreme form of O. crispum. The other two are of Orchid had been purchased in the Continent as O. crispum variety, were nominated as being forms of O. eximium.

Narcissus and Tulip Committee.

Present: Miss E. A. Bowles (in the chair), Miss Willmott, Messrs. Herbert Smith, J. T. Bennett-Poe, P. R. Barr, Herbert Chapman and Charles H. Curtis (hon. secretary).

Usually at this date there are good exhibits of late-flowering Tulips, but on this occasion there was not a single Tulip in the hall, this was the final meeting of the Committee for the season.

Fruit and Vegetable Committee.

Present: Messrs. J. Cheal (in the chair), W. Poupart, P. D. Tuckett, A. Bullock, A. J. Allan, F. Jordan, J. Allgrove, A. W. Metcalfe, E. A. Bunyard, G. P. Berry, W. H. Divers, W. Wilks, and Ed. Hartiss.

CROPS AND STOCK ON THE HOME FARM.

RHINANTHUS CRISTA-GALLI (YELLOW RATTLE).

This British parasite is an obnoxious pest in some grass fields. It is rarely seen where the grass grows luxuriantly, which shows that the presence of the weed is mainly due to poverty of soil. The best remedy is to encourage the free growth of the grass by the use of manure. Poor pastures never pay; if they cannot be improved they should be ploughed and cropped for several years before they are again sown with grass seed. Agricultural salt sown over the turf in the spring is said to prevent the growth of Yellow Rattle, and certainly it improves the quality of the grass, especially if a dressing of basic slag is applied in the following autumn at the rate of 5 cwt. per acre.

THE REARING OF TURKEYS.

The American Mammoth Bronze Turkey meets all requirements of hardiness, size, quality of flesh, and of egg production. A hot, dry summer suits turkeys best, continuous wet and cold causing chills, diarrhœa, and roup. Although turkeys are easily hatched in incubators, I prefer to put the eggs under hens, especially during cold or wet weather. Ten eggs are sufficient for one hen to cover properly, and twenty-eight days is the normal period of incubation. When the poults hatch, remove the shells, but do not attempt to hasten hatching by premature removal, for if the chicks are made to bleed they are almost sure to die. Allow them to remain under the hens until they are thoroughly dry; they do not need food for the first twenty-four hours. Place a boarded floor coop with a detachable bottom on grass. Cover the floor with a dry, clean bag for warmth for two days, frequently changing the bag. The first feed should be hard-boiled eggs, soaked chicken meal, and chopped green Onions. Green Chives are also good food. The chicks should be fed four times daily, a little at a time.

For the first fortnight they should be confined to a wire run in front of the coop on grass, changing the site daily. A space sufficient for the coop should be mown closely, as long grass is liable to give cramp and roup. As the poults increase in size the coop should be moved to a new site twice daily. Gradually increase the supply of Onion food, and add fine grit. Should the bird have diarrhœa, cease to give eggs for a few days, and add finely powdered chalk to the mixture.

PIGS.

Now is a good time to buy store pigs of eight weeks old to run through the summer for killing in the autumn. During the winter warmth makes a considerable difference to the manner in which pigs progress. A considerable quantity of green food can be obtained from the garden. Sugar Beet is a valuable food, and keeps fresh a long time when kept from the sun and drying winds. The roots should be steamed or boiled, and mixed with meal and milk.

All who purpose purchasing store pigs would be well advised to obtain a first cross from a pure-breed. *E. Molyneux.*

Obituary.

S. J. ALLEN. We learn from the pages of our contemporary, the *National Nurseryman*, U.S.A., of the death, in his 77th year, of Mr. S. J. Allen, the inventor and manufacturer of the Planet Junior farm and garden implements. We suppose that it is no exaggeration to say that these implements are used wherever gardening is practised, and certainly the gardening community is under a large and lasting obligation to the inventor of the Planet Junior implements. Like the inventor of the drill, Mr. Allen was originally a farmer, and the experience of hand hoeing inspired his inventive faculty. His first implements were made by the village blacksmith, and Allen soon discovered that these labour-saving tools were in demand among his neighbours. He was thus led to establish a manufacturing plant in Philadelphia. During the past 50 years the factory has grown until now it covers many acres.

J. S. GRAINGER. We regret to record the death of Mr J. S. Grainger at his residence, 17, Park Hill, Clapham, at the age of 77, after a long illness. The deceased was well known and esteemed by the seed trade, especially in the North of England and Scotland. He was for many years in the employ of Messrs. Peter Lawson and Sons, and was manager of their branch in London until they gave up the tenancy. He then joined the firm of Messrs. Jacob Wetzell and Sons as traveller, and remained with them for many years until the business was given up. He afterwards travelled for Messrs. Nutting and Sons, Ltd., with whom he had been 12 years at the time of his death.

MARKETS.

COVENT GARDEN, May 29.

Plants in Pots, &c. Average Wholesale Prices.

(All 48's, per doz., except where otherwise stated.)

	s. d.	s. d.		s. d.	s. d.
Azaleas	7 0–	8 0	Fuchsias, various ...	12 0	15 0
Araucaria excelsa	7 0–	8 0	Genistas	18 0	24 0
Asparagus plumosus	16 0–	12 0	Heliotropes	12 0	15 0
— Sprengeri ...	9 0	10 0	Marguerites, white	9 0	10 0
Aspidistra, green...	32 0–	42 0	Mignonette	12 0	15 0
Cyclamens	21 0–	24 0	Pelargoniums	15 0	18 0
Cinerarias	10 0–	12 0	— zonal, various ...	6 0–	8 0
Erica persoluta ...	36 0–	42 0	— 60's, various ...	30 0–	4 0
— Wilmoreana ...	30 0–	36 0	— ivyleaf, various	12 0–	15 0
			Roses, polyanthus (rambler (each)	24 0–	30 0
				5 0–	12 0

Ferns and Palms: Average Wholesale Prices.

	s. d.	s. d.		s. d.	s. d.
Adiantum cuneatum, 48's, per doz.	9 0–	10 0	Nephrolepis, in variety, 48's ...	12 0–	18 0
— elegans ...	9 0–	10 0	— 32's	24 0–	36 0
Asplenium, 48's, per doz.	9 0–	12 0	Pteris, in variety, 48's	8 0–	12 0
— 32's	21 0–	24 0	— large 60's ...	4 0–	5 0
— nidus, 48's ...	10 0–	12 0	— small 60's ...	2 0–	3 6
Cyrtomium, 48's ...	8 0–	10 0	— 72's, per tray of 15's	2 0–	2 6

REMARKS.—An exceptionally good trade is being done in pot plants and all kinds of roots. Pelargoniums are the most in demand, but all flowering plants are selling freely at advanced prices.

Cut Flowers, &c.: Average Wholesale Prices

	s. d.	s. d.		s. d.	s. d.
Arums— — (Richardias), per doz. blms.	9 0–	12 0	Liliums, cut,— — — rubrum, long, per doz. ...	6 0–	7 0
Carnations, per doz. — blooms, best American var.	2 6–	3 6	Lily-of-the-Valley, per doz. bun. ...	12 0–	21 0
Cornflower, blue, per doz. bunches	3 0–	4 0	Orchids, per doz.:— — Cattleyas ...	12 0–	15 0
— pink, per doz. bunches ...	4 0–	4 6	Paeonies, 6's, pink, per doz. bunches	4 0–	6 0
Croton leaves, per bun.	1 3–	1 6	— 6's, red, per doz. bunches ...	5 0–	6 0
Gardenias, per box (12's)	4 0–	5 0	Pelargoniums, double scarlet, per doz. bunches ...	12 0–	18 0
— (18's)	2 0–	3 0	— white, per doz. bunches ...	5 0–	6 0
Gladiolus Peach Blossom, per doz. bunches ...	21 0–	24 0	Pinks, white	3 0–	4 0
— white, per doz. bunches ...	24 0–	30 0	Pyrethrum, double, coloured, per doz. bunches ...	6 0–	8 0
Gypsophila, pink, per doz. bunches	6 0	—	— white, per doz. bunches ...	8 0–	9 0
— white, per doz. bunches ...	12 0–	15 0	— single, per doz. bunches ...	4 0–	6 0
Heather, white, per doz. bun....	9 0–	12 0	Roses, per doz. blooms— Frau Karl Druschki ...	2 0–	3 0
Iceland Poppies, per doz. bunches	6 0	—	— Ladylove	4 0–	6 0
Iris, Spanish, per doz. bunches—			— Liberty	4 0–	6 0
— white	24 0–	36 0	— Madame Abel Chatenay ...	2 6–	4 0
— blue	24 0–	36 0	— Niphetos	1 6–	2 6
— yellow	24 0–	30 0	— Richmond	3 0–	4 0
— mauve	24 0–	30 0	— Sunburst	3 0–	5 0
Ixia, red, per doz. bnchs ...	3 0–	4 0	Stephanotis, per 12 sprs.	3 0–	3 6
Lapagerias, per doz. blooms ...	3 0–	3 6	Stock, English, per bunches	10 0–	15 0
Lilium longiflorum, long	12 0	—	Sweet Peas, various, per doz. bun ...	5 0–	12 0
			Viola cornuta, per doz. bun. ...	2 6–	3 0

Cut Foliage, &c.: Average Wholesale Prices.

	s. d.	s. d.		s. d.	s. d.
Adiantum (Maidenhair Fern) best, per doz. bun ...	6 0–	8 0	Berberis, per doz. bun.	6 0–	8 0
Asparagus plumosus, long trails, per half-dozen	2 6–	3 0	Carnation foliage, doz. bunches ...	4 0–	5 0
— — medium, doz. bunches	18 0–	21 0	Cycas leaves, per doz.	3 0–	6 0
— Sprengeri ...	10 0–	15 0	Ivy leaves, per doz. bunches	2 0–	2 6
			Moss, gross bun ...	7 0–	8 0
			Smilax, per bun. of 6 trails ...	4 0–	4 6

REMARKS.—There is almost a famine of cheap flowers, the supply being exceptionally short. The crops of double White Narcissus finished during last week. At present there is only a limited supply of White Stock and double White Pyrethrum. Coloured varieties of the latter, both double and single, are an increasing supply daily. A few White Lilies are being offered, and, like all white flowers, are selling well. Such pieces as Lilium longiflorum and Richardias (Arums) are again reduced in number, and prices are higher. Cornflowers, Gypsophila (white and pink), Iceland Poppies, Sweet Peas, and Chrysanthemum maxima are more plentiful. Carnations are sufficient for the demand, but little can be said about Roses, the quality being very poor.

Fruit: Average Wholesale Prices.

	s. d.	s. d.		s. d.	s. d.
Dates, per box ...	1 0–	1 8	Nectarines, per doz	6 0–	24 0
Figs, Worthing, per doz ...	0 0–	1 0	Oranges, per case	60 0–	110 0
Grapes:— — Black Hamburgh, per lb ...	2 6–	3 0	Peaches, per doz ...	0 0–	30 0
— Muscats per lb.	4 0–	10 0	Strawberries, forced per lb.	2 0–	5 0
Lemons, per case...	60 0–	100 0	— Cornish, per lb.	2 0–	3 0
Melons (each) ...	3 0–	5 0	— Southampton, per lb. ...	2 0–	3 0
— cantelope (Continental)	15 0–	25 0	Walnuts, kiln dried, per cwt. ...	120 0	—

Vegetables: Average Wholesale Prices.

	s. d.	s. d.		s. d.	s. d.
Artichoke, Jerusalem, per ½ bus.	2 6	—	Mustard and Cress, per doz. punnets	1 0–	1 3
Asparagus, per bundle— — English ...	0 0–	12 0	Onions, Egyptian, per cwt. ...	75 0	—
Beans:— — broad, French, per pad ...	7 0–	8 0	— spring, per doz. bun.	4 0–	5 0
— French (Channel Islands), per lb.	1 6–	2 3	— Valencia, per ½ case	44 0–	48 0
Beetroot, per cwt.	8 0–	9 0	Parsley, per bus. ...	4 0	—
Cabbage, per doz	2 0–	2 6	Parsnips, per bag...	8 0–	10 0
Carrots, new, per doz. bunches ...	0 0–	15 0	Peas, per lb, ...	2 0–	3 0
— per bag ...	8 0–	10 0	Potatos, new, per doz. lb.	3 3–	3 6
Cauliflowers per doz	7 0–	8 0	Radishes, per doz. bunches ...	2 6–	3 6
Cucumbers, per flat	24 0–	28 0	Rhubarb, natural, per doz.	8 0–	12 0
Endive, per doz ...	2 0–	3 0	Shallots, per lb. ...	1 0	—
Garlic, per lb. ...	1 0	—	Spinach, per bus....	2 6–	3 0
Greens, per bag ...	8 0–	12 0	Swedes, per bag ...	2 6–	4 0
Herbs, per doz bun.	2 0–	4 0	Tomatos, per lb. ...	1 3–	1 6
Horseradish, per bun.	2 6–	3 6	Turnips, new, per doz. bunches ..	6 0–	8 0
Leeks, per doz. bun.	3 0–	4 0	Vegetable Marrows, per doz.	8 0–	12 0
Lettuce, Cabbage and Cos per doz	0 6–	4 0	Watercress, per doz	0 10–	1 0
Mint, per doz. bun.	4 0–	6 0			
Mushrooms, per lb.	1 6–	2 0			

REMARKS.—Indoor fruits are now more plentiful, including Black Hamburgh and Muscat Grapes, Peaches, Nectarines, Figs, Melons, and Strawberries. Southampton and Cornish Strawberries are on offer. Continental Asparagus is over, but English Asparagus is fairly abundant. Egyptian Onions are exceptionally dear, as much as 75s. being asked per bag. Oranges and Lemons are scarce and expensive. Supplies of English and Channel Islands Tomatos are increasing daily. Beans and Peas are scarcer. Mushrooms show a slight increase in supply, but Cucumbers and Vegetable Marrows are not so plentiful as usual at this season of the year. *E. H. E., Covent Garden Market, May 29, 1918.*

GARDENING APPOINTMENTS.

MR J. SMITH has left the Tower Nursery, South Benfleet, as Gardener at the Surrey County Asylum, Netherne.

MR F. S. SELMES has left the firm of MESSRS. WHITE AND SELMES, North Kensington, as Foreman to MR W. LEIGHTON GRAHAM'S Nursery, Purley.

MR D. ARTHUR has left Gosford Gardens to the late MR. DAVIES, Gerrards Cross, Bucks, to Kirkandrightshire, as Gardener to C. L. GALBRAITH, Esq., Ferrigies House, Kirkandbrightshire.

ANSWERS TO CORRESPONDENTS.

BEES IN AN ELM TREE. *H. C.* We fear you will be unsuccessful in obtaining the bees from the tree. You may be able to purchase a stock of swarm from the following firms: Messrs. E. H. Taylor, Welwyn, Hertfordshire; Mr. W. Woodley, Beedon, Newbury, Berkshire; Messrs. James Lee and Son, Ltd., George Street, Uxbridge, Middlesex.

BERMUDA ONIONS: *Seedsman.* The Bermuda Onions are distinct from those we grow. They are only suitable for a hot climate, where they give good returns. They are not a success in this country.

CHICOREI DE BRUXELLES. *J. P.* Brussels or Witloof Chicory is a strain of the Magdeburg Chicory, and is grown for use as salad from December till the end of February. The seeds, which are obtainable from seedsmen, should be sown in May or very early in June in rich ground, in drills made 12 to 15 inches apart. They germinate freely, and the seedbed should be kept constantly damp. When the plants are large enough, they should be thinned to 1 foot apart. A light dressing of sulphate of ammonia applied late in July is very beneficial to the crop. Towards the end of August the largest leaves should be removed. Late in October the first batch of roots may be lifted carefully for forcing, discarding the smaller crowns. All the leaves should be broken off close to the collar by hand, and the roots left exposed to the weather for eight or ten days. It is preferable in England to force the roots in deep frames or in a shed. They should be placed in rows made 6 inches apart, and a space of 2 inches allowed between the plants in the rows. The roots should be covered with a layer 10 to 12 inches deep of fine soil. The only attention the plants need afterwards is protection from frost. The crop is ready for cutting as soon as the crowns break through the surface. The soil should then be removed and the head cut with a heel from the collar. The second batch for forcing should be lifted at the end of November, and the last a month later. Some growers market the heads loose in boxes, each holding 6 lbs.; others bunch them in 1 lb. bundles.

GALLS ON OAK: *Miss Pile.* The gall is that known as the "Woolly Gall," formed by the insect Andricus ramuli.

INSECTS: *A. Turner.* The insects are larvae of Caratid, or ground beetles; they are beneficial in gardens.

NAMES OF PLANTS: *W. and S.* 1, Pyrus Aria (White Beam); 2, Crataegus coccinea.—*J. H.* 1, Syringa Emodii; 2, Staphylea colchica.—*T. D.* Sansevieria zeylanica.—*W. B.* Tradescantia virginica.—*F. G. S.* Claytonia sibirica.—*F. F.* Carex riparia, the largest British sedge.

PEARS, PEACHES, AND MELONS: *Pomus.* Pinch the shoots of the Pear tree at the sixth or seventh leaf, and do not allow subsequent shoots to develop. Blistered leaves on Peach trees should be removed and destroyed, and the trees syringed on two or three evenings with water containing 2 oz. of soft soap to the gallon. Melons are best grown without shading so long as the temperature does not exceed 95°. Early ventilation on bright days is necessary; if the ventilators are opened after the house becomes very hot the plants will flag.

POTATOS OR POTATOES: *G. W.* The practice of omitting the "e" after "o" in such words as Potatos and Tomatos has existed in the pages of the *Gardeners' Chronicle* for many years, on the ground that, though unusual, it is correct, and is merely an anticipation of a usage which will become more and more general. Already the penultimate "e" has been dropped in many similar words.

VINES IN AN UNHEATED VINERY: *Pomus.* An unheated vinery facing east requires ventilation at the top of the roof as early as 8 a.m. at the present time, and 5 o'clock at midsummer. If it faces south, two hours later will do, and when it cannot be attended to thus early it is safest to leave the ventilators open a little all night. Mildew and red spider can be eradicated, in the absence of a sulphur vaporiser, by dusting flowers of sulphur on the leaves after damping them, and keeping the temperature for a considerable time up to 85° by sunheat, or the sulphur may be mixed with soapy water and applied in the form of spray, by placing a finger against the nozzle of a syringe. Mealy bug may be kept in check during the growing season by syringing with Campbell's Necrosoap, 1 oz. to the gallon of soft water, and Vines can be thoroughly cleared of this and all other insect pests by painting two or three times during the dormant season without removing the bark, with the same compound, at a strength of 4 ozs. to the gallon. All sub laterals excepting the one at the axil of the first leaf should be removed.

WEED IN LILY POND: *J. W. M.* Ascertain the amount of water contained in the pond by multiplying together the average length, breadth, and depth in feet, and multiplying the result by 6¼, the approximate number of gallons in a cubic foot. One pound of copper sulphate should be used to every 100,000 gallons of water. Break the material small, and enclose it in a bag of loose texture. Tie the bag behind a boat, and draw it along in the water in parallel paths about 10 to 20 feet apart. The copper sulphate will not injure the Lilies, nor any fish that may be in the water, if care be taken not to allow the bag to remain stationary in one part of the pond. If the weed is very thick it will be well to clear the surface of the water as much as possible before applying the copper sulphate.

Communications Received—G. M.—S. H. J. V.—Miss M. G.—Rose, canina L. J.—Kilian, Dublin—N. & Sons—J. R.—M. & S. of E. O. S.—J. A. P.—G. R. B. L.—A. B.—P. C. M. V. G. A. H.—P. S. H.—R. F. S.—H. E.—B. & Son, thanks for seed for R.G.O.F. box.

THE
Gardeners' Chronicle
No. 1641.—SATURDAY, JUNE 8, 1918.

CONTENTS.

ILLUSTRATIONS.

NOTES FROM KEW.—VI.*

BRIGHT sunshine and unusual warmth from May 15 to 22 shortened the flowering period of a large number of plants which are usually in bloom for several weeks. Rhododendrons and Azaleas bloomed and withered with extraordinary rapidity, as also did Lilacs, Chestnuts, Hawthorns, and many other showy flowered trees and shrubs. They had a brief season, and if all goes well such plants generally should seed freely this year.

Irises at Kew have ceased to behave well, though there was a time when the Iris garden was a great feature in May. Then disease appeared, and, on the advice of the plant doctor, they were subjected to treatment, but they have never recovered. The disease, known as Iris rot, is said to be due to bacteria. Masses stated that it was very prevalent in this country and on the Continent, whole beds being sometimes destroyed by it. The leaves wilt, turn yellow, and die, and the rhizomes rot. Removing and burning the worst and transplanting the others in fresh soil proved to be hard labour in vain, as also did the application of specifics. We have struggled to overcome this disease, but nothing short of destroying the whole collection and starting afresh in another part of the garden will set matters right. This is a large order, but it will have to be done when the war is over, unless the cultivation of such plants is to be abandoned at Kew. According to our Museum Guide, Iris florentina, I. pallida, and I. germanica are largely cultivated for their rhizomes in Continental countries to supply the Orris root of commerce. The roots are dug up in August, trimmed, peeled, dried in the sun, and then sorted into different qualities. I believe our Iris troubles began when transplanting in August was first practised. It is, in my belief, so utterly opposed to nature to dig up rhizomatous Irises when they are not only in full leaf, but actively growing, that we are asking for trouble by doing it. Bulbous Irises are different. They stand such treatment as well as Daffodils, Tulips, and many other bulbous plants do. Cottagers never make this mistake, and it is in their gardens that one may see these Irises as happy as Rhubarb and Horseradish.

"Then why did you dig yours up in August?" someone will ask. Because gardeners, like other folk, are too ready to be guided by faddists and fashion. Someone says it is the right thing to do, and we believe them and practise it.

The rock garden, under the influence of sun and warmth, assisted by a frequent use of the hose-pipe, has come on with a rush, and for the last fortnight or so it has been at its zenith of interest and attractiveness. Many Primulas lasted only a short time. P. Cockburniana is still a patch of flame colour, almost too vivid to be looked at; I prefer the hybrids from it, Unique and Lissadel. Under the shade of a Yew tree, P. helodoxa is delightful. Clearly it is a shade-lover; probably all Primulas are, where the sun has any power. I should call helodoxa the Chinese form of imperialis, and if anything a better garden plant. It must be looked after for seeds, the plant being short-lived. In my last "Notes," P. davurica is mentioned among the several flowering in the rock garden. It should have been darialica (see fig. 99). The two names are less alike than the two plants they stand for, both being forms of P. farinosa: davurica, according to Professor Balfour, occurring in Siberia, North Mongolia, and North America, and darialica in the Caucasus. P. farinosa is the Bird's-eye Primrose of our bogs and meadows, scotica being a purple form of it. Being the commonest and widest-spread of all Primulas, and therefore very variable, its forms are a source of worry to botanists, scores of species, so called, having been made from its variations. It is a comfort that they all have more or less the same value in horticulture as the type, and that the name farinosa may well stand for them all.

A true blue flowered Meconopsis horridula, and a colony of M. aculeata showing a variety of colours, are happy under the shade of tall Hollies, and M. paniculata, with yellowish flowers, near by, is also good. Cypripedium spectabile has made itself at home on a dry slope, upsetting the belief that it will not thrive except in swampy conditions. Orchis foliosa, O. maculata, and O. latifolia are almost weeds in the Kew rockery, and the hybrids from them are happy there also. Two of the most persistent weeds are Erinus alpinus and a black Viola—V. tricolor nigra. Being harmless and pretty, they are allowed free range. Oxalis adenophylla and O. enneaphylla are represented by large healthy patches, now smothered with flowers. Aster subcoeruleus, A. alpinus, and its variety Garibaldi, are two of the most effective plants. Celmisia spectabilis has 16 perfect flowers on it, and is probably what Mr. George Paul called it the other day—the best plant of this New Zealand species in England. As for Saxifrages, they are at top form, including S. longifolia, with a fox-tail-like spike of sparkling white flowers in a setting of Dianthus caesius, which clothes one side of what we call the peak, the highest point in the rock garden. There are numerous large cushions of Dianthus of sorts, alpinus (quite 2 yards across), dependens, neglectus, deltoides, and several hybrids.

The best show of Alpine Pinks I have ever seen was at Glasnevin. These plants are apt to burn and go off in patches at Kew, the fate of too many Alpines in this garden. Anemone obtusiloba has become established in a partially shaded position. Half a dozen seedlings of it from Kew-saved seeds gave only one blue-flowered plant like the parent, the other five being white. Pentstemon scouticlorus and P. heterophyllus are good rockery plants at Kew, and so is Eriogonum subalpinum.

Weldenia candida is pushing up through the soil, and is evidently quite hardy at Kew. The bog garden is crowded with fat plants of Rodgersia, Iris Kaempferi, Lysichiton, and a thriving clump of Ranunculus Lyallii. Mr. Elwes is probably right (p. 211) in his view that the white Lysichiton is a distinct species from the yellow one. A figure of the Kew plant of the former, which this year has grown strongly and flowered well by the side of a rock pool in the Temperate House, has been prepared for the *Bot. Mag.*, and a photograph of it is reproduced in fig. 100. The spathe of L. camtschatcense (see *Gard. Chron.*, April 6, 1918, fig. 67) is ovate in outline, but in the white one it is almost cordate. The latter came, I believe, originally from the Petrograd Botanic Gardens as L. c. alba.

Paeonies are receiving special attention at Kew from Dr. Stapf, who hopes to be able to set their names in order. There are, in my belief, too many species. The best in flower now are romanica, lobata, peregrina, officinalis, Emodii, Broteri, anomala, and Veitchii, which are all known in gardens. If I wished to plant two of the best species for effect, I would prefer the red lobata, which Mr. F. Gifford showed in quantity at the R.H.S. meeting on the 28th ult., and the white Emodii. Paeonies grow well under trees, even Elms, and they look very much at home among Ferns, as may be seen in the wild garden at Kew, where plants of the old double crimson Paeony have thriven for years under the shade of Elms and among Male Ferns.

Before leaving the outside garden, I must mention Magnolia parviflora and M. Watsonii, both of which have flowered freely this year. The Wistarias have also flowered well, and they are quite gay still. The Azalea garden has been as much a Mecca for visitors as ever, and the Rhododendron Dell has still many grand bushes of the later flowering sorts. Mr. George Paul informs me that he has crossed a number of good garden Rhododendrons with the Chinese R. decorum, a late flowerer, in the hope that a race of summer-flowering

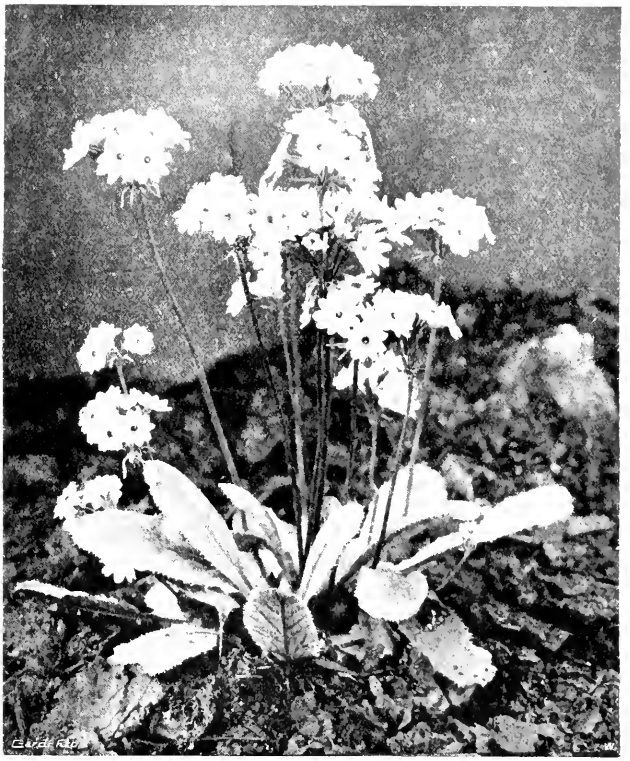
* Previous articles appeared in the issues of January 19, February 9, March 9, April 6, and May 18.

hybrids may be thus obtained. I am not particularly in love with decorum, which is only a slight variant from Fortunei, and has not the odour that characterises the Japanese plant. This year the difference in the time of flowering between Fortunei and decorum was only about a fortnight.

Calceolarias are now a strong feature in the Conservatory (No. 4) too strong, perhaps, the excuse being that Mr. Coutts has been crossing them and has raised some showy mongrels, those from C. cana and what he calls the carpet-bag Calceolarias being the most pleasing. They are heavily spotted and free-flowering. C. Clibranii is good, and so is C. Allardii, a three-pli hybrid raised at the John Innes Horticultural Institution by Mr. Allard from herbacea, angustifolia, and plantaginea. As a pot plant for the greenhouse and for summer bedding I think Allardii will find much favour; a photograph of one of the Kew plants is reproduced in fig. 101. Years ago Mr. John Jeffreys, Oxford, crossed the "carpet-baggers" with, I think, amplexicaulis, and obtained a race showing great variety of colour and pleasing habit which was named Jeffreyi. The plants were tried for bedding at Kew and were a great success.

Leptospermum Chapmanii has been admitted to the front rank among showy greenhouse plants, and it will, I believe, become a rival to Cape Heaths and Epacrises. Mackaya bella is flowering freely this year, and Elaeocarpus cyaneus is good in No. 4 House. Haemanthus Katherinae, the Irish strain, as we call it, is grandly in flower in the Mexican House, where, planted in the borders here and there, it has made itself at home. Magnolia macrophylla is in flower in the Himalayan House. Two giant Bromeliads, namely, Tillandsia Glaziovii and T. gigantea, are flowering in the Victoria House, where Nymphaea gigantea is another great attraction to visitors. The Nepenthes are at present under a cloud, thanks to a visitation from painters, who are worse than the ten plagues when they get inside a plant house. In the Orchid houses Sobralias, Schomburgkia tibicinus, Vanda Charlesworthii, Renanthera Imschootiana and Angraecum Scottianum are the best things in flower.

I am able to report progress in the vegetable department. The Potatos planted on the palace lawn are growing well, thanks, I believe, to dressing the soil with sewage sludge from Mortlake. The Onions in the Palm House Terrace garden look promising, and there is no fly on them, so far. A crop of Spring Cabbage has been marketed, and the nursery crops of Turnips, Cauliflowers, and other vegetables are thriving. The flower-beds are now showing seedlings of various food plants, some of which ought to be interesting as well as good to eat. W. W.



[Photograph by W. Irving.

FIG. 99.—PRIMULA DARIALICA: FLOWERS ROSE-COLOURED.

(See p. 233.)

ORCHID NOTES AND GLEANINGS.

ODONTOGLOSSUM CRISPUM LEEANUM

MR. RICHARD ASHWORTH, Ashlands, Newchurch, Manchester, sends us a flower of a remarkable and distinct form of Odontoglossum with the following remarks: "I am sending a flower cut from a seedling Odontoglossum crispum flowering for the first time, named O. crispum Leeanum. The parents are O. crispum Black Prince, bought from the Continent 17 or 18 years ago, and O. crispum General Roberts, which is a finely blotched flower. The Black Prince crosses give the very darkest colour I have ever seen, and this dark colour is carried forward to all the descendants. If you hold the flower up to the sunlight and look through it the shade is a lovely dark maroon."

The flower, which is of good shape, has dark maroon sepals with clear white margin and some white showing at the base. The petals have a white ground, but the greater part of their surface bears large maroon blotches. The lip, which is slightly fimbriated, is white with a yellow crest, in front of which is one large and several smaller maroon blotches. It is a showy variety, and the darkest we have seen.

LAELIO-CATTLEYA EXCELSIOR THE DELL VARIETY.

WE have received a flower of this handsome cross between L.-C. Canhamiana Rex and C. Mendelii, from a plant raised in The Dell Gardens, Englefield Green. The defect in L.-C. Canhamiana (L. purpurata × C. Mossiae) is in the folding back of the petals. By the cross with C. Mendelii the defect has been effaced, the hybrid having flatly-arranged petals some 7 inches long and 3 inches wide. The substance of the flower, and the size and width of the lip, make it a great advance on L.-C. Canhamiana. The sepals and petals are pure white, and the front of the lip Tyrian-red. The original form was first shown by Messrs. E. H. Davidson and Co., Twyford, at the Yorkshire Gala, 1913, and recorded in the *Gardeners' Chronicle*, June 21, 1913, p. 430.

ODONTOGLOSSUM CRISPUM EASTERN PEARL.

A FLOWER of a pure white form of Odontoglossum crispum taken from an imported plant is sent by R. G. Thwaites, Esq., Chessington, Streatham. In the purity of its white the new plant resembles O. crispum xanthotes, which was first imported and flowered in 1894, and of which varieties have since appeared, but it is of much more perfect shape, and the distinguishing occasional lemon-yellow spotting seen in all forms of xanthotes is absent. Although not of the largest size the variety Eastern Pearl is one of the most perfect and attractive of the typical O. crispum varieties.

The sepals are ovate, the petals almost circular in outline, rather broader than long, and slightly fringed. The lip, which is broader than usual in the species and slightly fringed, has a pale yellow shade in front of the crest, the whole of the flower with that exception being snow-white.

NOTICES OF BOOKS.

THE ALLOTMENT MONTH BY MONTH.

THIS is the title of one of the latest pamphlets on vegetable cultivation in war-time. It is written by Mr. R. H. Crockford, and edited by Mr. Clarence Elliott, of Stevenage, who contributes the preface. Some of the more expensive vegetables are omitted—such, for instance, as Asparagus—as being unsuitable for allotment cultivators; and in regard to the more popular sorts, it is hardly to be expected that anything very fresh could be said about them. At the same time the letterpress is evidently written by a practised hand. Allotment holders and all growers of little experience, who have not already furnished themselves with some of the very numerous pamphlets which have been issued during the past two years, will find Mr. Crockford's contribution to the subject of very great value. It contains nearly thirty pages, and is published at 7d. net.

PROTECTING STRAWBERRIES.

VARIOUS means are adopted to preserve ripe Strawberries from dirt and grit, and the question is not so much which mode is the best, as which is the most convenient for the particular garden. The practice of surfacing the ground with fresh, strawy manure not only serves the purpose of protecting the plants from frost, but also that of giving nourishment to the roots. After a time the litter is washed perfectly clean and the straw becomes bleached, leaving a close, clean, strawy surface in the spring for the fruit to rest on and from which it can be gathered in a clean, sweet state.

But this method is not always successful. In wet soils the manure may cause the crowns to decay, and in gardens where slugs are unusually numerous the winter's surfacing affords them harbourage, and they emerge from their haunts in the spring and destroy the fruit. However, where the practice has been adopted little more is now needed, but where no litter has been applied measures must be taken to thwart it, or a thunder shower of half an hour's duration may spoil the work of a season.

Whatever means are adopted for keeping the fruit clean, it is important that the material be applied at once. To allow the surface of the ground until the berries are approaching ripeness is an error which is too often committed. The heavy trusses cannot be lifted to have straw put under them without injuring the stems, the result of which is a check to the berries' swelling. The rough handling of the trusses is a prime source of small fruit, as the stems are as susceptible to injury as is the haulm of Peas. Protection should be given when the stems are erect, and before they are flattened to the ground by the weight of the fruit.

Some growers use twiggy sprays to hold the fruit above the foliage. The plan is a good one, but all have not the twigs, and a capital substitute is to insert three or four sticks around each plant, and run a strand of twine around each root, or, if the roots are close, a strand along each side of the rows will suffice. This method is simple and effectual. Others use wire supports, these being simply a half-circle of wire on three legs. The supports are forced into the ground, two half circles to each plant—and form a capital supporting cradle. The wires are easily made, and will last for years. The common practice of littering with clean straw is always effectual. The straw should be cut in 1-inch lengths; it is then easily placed around the plants from baskets, half the amount of straw will do, and it is more quickly applied than when long. Short straw is, moreover, the best preservative of the fruit from slugs. Slugs cannot travel freely on the round, loose particles of straw, which form an ever moving surface. The very best time to surface the ground with this material is when the plants are just going out of bloom; in any case it should be applied before the fruit is half-grown. Some means must be adopted to protect the fruit from birds. Scarecrows are of very little use. The general plan is to net the beds. Netting is cheap, and should be freely used in all fruit gardens, especially where ground is limited, and every pound of fruit is valuable. The common plan is to lay the nets over the plants and remove them when the fruit is gathered; that method will answer, but it is clumsy in comparison with spreading the nets over the beds 5 feet from the soil. Stakes driven in the ground at convenient distances, and roof-laths tacked from stake to stake, form a frame which is quickly made, and over which the nets can be spread and pegged to the ground all round. One has only to draw aside the net to gain admittance, and the fruit can be gathered in comfort. Moreover, time is saved in covering and uncovering, and the net is much less liable to rot than if laid direct on the bed. *James A. Paice.*

NOTES FROM AMERICA.

EFFECTS OF THE WINTER IN THE ARNOLD ARBORETUM *

THE winter of 1917-18 has been one of the severest in New England of which there is any record. In December, when the ground was without a covering of snow, the thermometer did not rise from above zero for nearly a week, with a minimum of 17° below. There was little snow at any time during the winter, and the ground, which froze to a depth of from 5 to 7 feet, was not clear of frost until after April 1. Abundant rains late in the summer and in the early autumn, and the fact that the cold has been continuous through the winter without periods of warm weather, which in this region often excite dangerous vegetative activity, have enabled many plants to survive the extreme cold, which, under less favourable conditions, would probably have destroyed them. Still it seems safe to predict that any tree or shrub which has lived here through the past winter will be able to resist successfully a winter in Massachusetts. The condition of the plants in the arboretum at this time is of general interest, therefore as an indication of the trees and shrubs of recent introduction which can be successfully grown in this climate. It must, however, be remembered that local conditions, that is, conditions of soil, position, moisture and dryness, influence the hardiness of plants, and that a tree which succeeds in the arboretum might not be hardy in another garden in the same general region.

The Conifers which have been killed are the glaucous-leaved Mt. Atlas Cedar (Cedrus atlantica glauca), which has been kept alive for several years in a protected position; young plants of the Spanish Fir (Abies Pinsapo) which has been killed before in the arboretum; Abies magnifica of the California Sierra Nevada; Abies cephalonica var. Appollinis from the mountains of Greece; Picea Sargentiana, one of the new Spruces from Western China; and nearly every plant in a large collection of the short-leaved Pine of the Eastern United States (Pinus echinata). These Pines were raised at the arboretum twenty years ago from seeds gathered on Staten Island, New York, the northern limit of the range of this tree, and appeared to be perfectly hardy until this year. On several Conifers the buds are uninjured, and are beginning to swell, although the leaves have been more or less browned by the cold and will soon fall. Conifers injured in this way will probably recover, although their growth for the year will be necessarily checked. Among the trees with injured leaves and uninjured buds are the Cedars of Lebanon from the Anti-Taurus in Asia Minor, which have been growing in the arboretum for sixteen years without protection, and which it was hoped would be able to support the worst conditions New England winters could offer. Other Conifers with injured leaves are the Sugar Pine (Pinus Lambertiana) from the Sierra Nevada of California, the Mexican White Pine (Pinus Ayacahuite),

Photograph by E. J. Wallis.

FIG. 100.—THE KEW PLANT OF THE WHITE FLY BUTTERCUP. (See p. 254.)

* *Bulletin of Popular Information*, New Series, Vol. IV., No. 1, Arnold Arboretum, Harvard University.

the Chinese Hemlock (Tsuga chinensis), which has lost most of its top, and Abies cephalonica from the island of Greece. One or two specimens of this tree will probably not recover. The leaves of the California Incense Cedar (Libocedrus decurrens), of Abies grandis, of Abies amabilis, and of the Hemlock of the north-west coast (Tsuga heterophylla) are slightly injured. The native White Cedar (Chamaecyparis thyoides) is badly hurt, and some of the plants will probably die. The Red Spruce (Picea rubra) from northern New England has suffered badly, as have the plants of the upright form of Juniperus communis from central Massachusetts. The leaves of Abies amabilis, too, from the Cascade mountains of Oregon, are slightly browned, as are those of several plants of the Japanese Abies sachalinense. On a few of the plants of the Chinese White Pine (Pinus Armandii), of the Japanese Pinus densiflora and P. Thunbergii, and of the Chinese Pinus sinensis var. yunnanensis and var. denudata the leaves are also brown. There is no reason, however, to doubt that these will all recover. It is interesting that, with the exception of four exotic Conifers, three of which have been kept alive in the arboretum with much difficulty and have now perished, the most serious damage of the winter to Conifers has been to four native species, Picea rubra, Pinus echinata, Chamaecyparis thyoides, and Juniperus communis. All the new Spruces and Firs from Western China, with the exception of Picea Sargentiana, are uninjured, as are practically all the Chinese Pines. Uninjured, too, are the Carolina Hemlock (Tsuga caroliniana), the western Arbor Vitae (Thuya plicata), and the Spanish Pine (Pinus nigra tenuifolia), which, judging by the climate of the regions where these trees grow naturally, might well have suffered from the cold of the past winter.

Of the new trees with deciduous leaves introduced by the arboretum from China, the following are uninjured: all the Oaks, Elms, Birches, Nettle-trees, Beeches, many of the Cherries, the Pears and Apples, Davidia, Eucommia, and Ehretia acuminata.

Fortunately frost this spring did not injure the buds of many of the trees and shrubs which open their flowers in April. Several of these have been unusually fine this year, and have remained in good condition for a longer time than usual. After some of the Willows the earliest shrubs in the Arboretum to bloom this year were the Buffalo Berry (Shepherdia argentea) and the Leather-wood (Dirca palustris).

PLANT NOTES.

GLOBULARIA CORDIFOLIA.

In his fascinating book, *Among the Hills*, Mr. Reginald Farrer speaks of the "misty pale-blue clouds of Globularia cordifolia," mingled with the native Pansies. It is not given to the British gardener to enjoy in his garden this alpine beauty on such a scale as Mr. Farrar saw it, yet a few plants will give pleasure of no mean kind, and will supply the rock garden with a feature of decided interest. Of the several species of Globularia in cultivation G. cordifolia is one of the prettiest, while it is also of easy cultivation. The plant is not very floriferous in cultivation, but the cushion of deep green, glossy, cordate leaves beneath the blue, Daisy-like flowers, is very attractive. The plant grows wild among other herbage; in gardens it sometimes suffers injury from being too much exposed.

Yet if planted in cool soil, near the base of the rockwork in a level spot, and given plenty of water in prolonged dry weather, it will generally do well and flower with a moderate amount of freedom. A top-dressing of loamy soil applied in spring and autumn will induce roots to develop from the stems. *S. Arnott.*

The Week's Work.

THE KITCHEN GARDEN.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey

PLANTING WINTER GREENS.—Brussels Sprouts, Broccoli, Kale, Early Savoys, Cauliflowers and other greens still in the seed-beds should be planted out, if possible, in showery weather. A good practice is to draw a shallow drill in which to dibble in the plants. Where the quarters are not yet vacant for them the plants should be pricked out in a fresh bed to prevent them from getting drawn. Broccoli needs plenty of room, and should be allowed a space of not less than 2½ feet each way. One of the causes of Broccoli failing to withstand the winter is being planted too closely in over-rich soil. This crop should be planted in firm ground, and no manure should be used on land that is in good condition; on the contrary, Cauliflowers intended for use in the autumn should be put out on well-enriched ground, and encouraged to grow without loss of time, to make large heads.

EARTHING-UP CROPS.—The importance of earthing up most kitchen-garden crops cannot be over-estimated. Early Potatos are generally earthed up in good time, the operation being repeated as the plants increase in growth, mainly to protect the haulm from frost. The soil should be drawn up to Maincrop Potatos when the tops are 8 to 10 inches high. Before earthing-up break up the soil with a fork without disturbing the tubers in the rows; in the case of light soils use the hoe freely in the rows to destroy weeds and break the soil to a fine tilth. All the members of the Brassica family, Broad Beans, Peas and Kidney Beans are benefited by frequent hoeings, which check evaporation of soil moisture and, disturbing the soil, allow the rains to soak in more freely.

CELERY.—Plant out later batches of Celery when the plants are about 4 inches high, in single or double rows, as convenience allows, as recommended in the Calendar for May 17. If the plants are allowed to become too large they will receive a check when transplanted and take considerable time to recover. Keep the plants well supplied with water during dry weather, and give plenty of moisture to Celery that is already planted. Give frequent light dustings of soot when the plants begin to grow, applying the material when the foliage is wet with dew.

TOMATOS. Young plants that have been treated as advised in previous Calendars should be suitable for planting either under glass or in the open. Houses that have been cleared of French Beans or other crops should be cleansed and filled with strong Tomato plants. Tomatos do not require a very large amount of soil; the main point is to use a fairly rich compost and make it firm. When the fruit is swelling give frequent top-dressings of rich soil mixed with guano or other stimulant, and water the plants occasionally with weak liquid manure. Tomatos succeed best when growth is restricted to a single stem, removing all side shoots as they appear; they should be planted not closer than 15 inches apart and fully that distance from the roof-glass.

COLEWORTS.—Directly frosts destroy Peas, Beans, and other somewhat tender vegetables there is a demand for Cabbages. It is therefore advisable to sow seed now of Rosette Colewort and in ten days' time Hardy Green Colewort. If these sorts are sown rather thinly on an open piece of ground the plants will be ready for putting out as the land is cleared of early-maturing crops. Plant at 12 to 15 inches apart each way. The plants will give tender hearts from October to mid-winter or later, according to the weather. Amateurs especially should grow this vegetable to ensure a good supply of greens in the winter.

SLUGS.—These pests have been very troublesome this spring, and have injured all tender vegetation. It has been difficult to get seed to germinate in the open, but more difficult to preserve the seedlings from injury by slugs. Those who sowed seed under glass to obtain plants for transplanting have every reason to congratulate themselves. Frequent rains have washed off dressings of soot and lime as soon as they were applied to the plants. Where allowance for losses was not made in sowing, the defects must be made good at once by sowing fresh seeds.

THE HARDY FRUIT GARDEN.

By JAS. HUDSON, Head Gardener at Gunnersbury House, Acton, W.

STRAWBERRY PLANTATIONS.—The first opportunity should now be taken to prepare the earliest Strawberry beds for the ripening of the fruit. Hoe the ground thoroughly—more than a mere surface hoeing. A fairly good dressing of lime should be shaken around each stool, and well under the foliage, as a deterrent to slugs. Litter need not then be applied until the fruit is on the point of colouring. Defer this operation as long as convenient in order that the soil may become warmed by the sun. Damage to the plants may be prevented by fixing the netting in advance of the mulching, with walking-room under the nets. On shallow soils it may be advisable to water the beds freely in advance of the ripening, but do this with clean water; never use liquid manure for this purpose. Pour the water directly into the crowns of the plants. In order to keep the fruit off the ground wire supports can be used, which may be obtained from almost any sundriesman. Mid-season and late varieties should receive attention in due course. Plants recently put out from their fruiting-pots will need close attention, and watering must not be overlooked. A little shading from very hot sunshine will be an advantage; for this there is nothing better than a handful of long litter laid on the top of each crown. The Perpetual varieties should now be growing freely. Do not let them develop any fruiting spikes yet. Keep the trusses pinched out until the first week in July, but still peg down an occasional runner; they should fruit this autumn. Damp the beds over towards the evening to encourage clean growth.

PLUM TREES.—Apparently, Plum trees are not likely to bear even a moderate crop this season. Fly is a little troublesome, but can be held in check by vigorous syringings with a suitable insecticide. With a thin crop an opportunity is afforded of taking off an occasional branch, to make the trees more shapely. An artificial manure, containing a fair percentage of phosphates and potash, will help the trees to bear better another season. If any trees show signs of Silver Leaf disease remove the affected branches and burn them at once.

THE ORCHID HOUSES

By J. COLLIER, Gardener to SIR JEREMIAH COLMAN, Bart., Gatton Park, Reigate.

CATTLEYAS AND LAELIAS.—Cattleya Mendelii, C. Mossiae, Laelia purpurata, and many hybrids from these species, are in the height of their flowering season. In the case of plants that are not well rooted the flower-spikes should be removed directly they appear, or cut as soon as the flowers are fully developed. As any of the above-named plants pass out of flower they should be looked over to ascertain if additional pot-room or new material is needed. Plants of C. Lawrenceana, C. Schroderae, and others that flowered at an earlier period, and have just had a short season of rest, will soon commence to grow afresh, and should be repotted or top-dressed as found necessary. For a few weeks after repotting careful watering is necessary, and, until well rooted, a little extra shade should be employed. The plants should be sprayed overhead two or three times every day during bright weather. Cattleya Warscewiczii (gigas), C. Dowiana and its variety aurea, C. Warneri, C. Gaskelliana, and others that produce their flowers during the summer months are now making new growth, and should be placed in the warmest and brightest position in the Cattleya house. Apply water more liberally at the roots, thoroughly soaking the compost, but allowing it to become moderately dry between each application. A few of the earliest plants will be producing their flower-spikes.

Any specimens that do not bloom may be repotted, if necessary, as soon as they commence to root from the current pseudo-bulbs.

DENDROBIUM.—Plants of the evergreen section of Dendrobium, such as D. thysiflorum, D. chrysotoxum, D. Brocklhartii, D. densiflorum and D. Farmeri, should be kept cool and the roots dry for a short period after they have passed out of flower. The necessary repotting or resurfacing should be attended to as soon as fresh roots develop from the base of the young growths. The plants should not be subjected to root disturbance until it is found to be really necessary, as they flower most freely when pot-bound. While the plants are in active growth they should be placed in an ordinary plant stove or Dendrobium house, but when the pseudo-bulbs are fully developed they should be grown in a slightly cooler temperature. The cooler-growing D. infundibulum and D. Jamesianum may also be given attention if a large receptacle is required or the compost has become sour and decayed. All this section ought to be potted firmly, in a mixture consisting of Osmunda-fibre, A 1 fibre, and Sphagnum-moss in equal parts. Young shoots of the deciduous and semi-deciduous sections are growing freely, and developing new roots quickly. The plants should be more liberally supplied with water, and the young growths supported by looping to the old pseudo-bulbs or to neat stakes. Do not allow them to bend over the sides of the pots, as they might become permanently injured. If any of the plants have filled their receptacles with roots, the present is a suitable time to shift them into larger pots. They should be taken out without unduly disturbing the ball and placed in larger pots, the space around being filled in with compost.

FRUITS UNDER GLASS.

By W. J. GUISE, Gardener to MRS. DEMPSTER, Keele Hall, Newcastle, Staffordshire.

FIGS. Houses containing trees on which the fruit is ripening should have plenty of air admitted during the day and a liberal amount through the back ventilators at night. Even though the weather be warm and genial, fire heat will still be necessary to obtain good colour and high flavour in the fruits until the nights get warmer. Sudden fluctuations in the temperature at this period will cause the fruits of the second crop, which are swelling rapidly, to drop. If the crop be a heavy one, thin the fruits before the energies of the trees are unduly strained. It is not advisable to remove all the smaller fruits; rather leave a fair number, provided they are of good shape, thus securing a succession of ripe Figs over an extended season. The use of warm, diluted liquid manure at every other watering will increase the size of the fruits, or failing this stimulant, apply a top dressing of rich materials. Trees trained near the roof glass are very subject to attacks of red spider, making it a difficult matter to keep the pest in check when the fruits are ripening. Use the syringe freely, damping the bare spaces and branches daily without wetting the fruit; the trees themselves may be syringed from time to time directly the ripest fruits are gathered. The work of stopping, thinning and tying the shoots should be continued, as good Figs cannot be obtained unless the sun's rays reach them and the air circulates freely about them. Some of the shoots will only need to be pinched once according to the space available, others twice, but as every shoot stopped makes a new growth the young wood must ripen thoroughly or it will be of little value for next year's fruiting.

EARLY PEACH TREES.—Not only is it good practice to remove the old fruiting wood and superfluous growths from Peach trees directly the fruit is gathered; it is necessary to allow the sun's rays and air to enter the tree freely to thoroughly ripen the young wood for next year's fruiting. Tie in the most healthy and best placed shoots not closer than 4 inches apart. See that the trees are free from insect pests, using, if necessary, an insecticide. Increased ventilation day and night, with syringings of clear water twice daily, will give the young wood the nut brown appearance that indicates ripeness.

CHERRIES.—Keep houses containing ripe Cherries cool and well ventilated. Light scrim, tiffany, or nets thrown over the roof during hot weather will prolong the fruiting season and keep the Cherries safe from birds. Assist the formation of fruit-buds by pinching all shoots not required for the extension of the trees to a few leaves. The soil should be kept moderately moist only: an excess of moisture at this stage would cause the fruit to crack.

PLANTS UNDER GLASS.

By E. HARRISS, Gardener to Lady WANTAGE, Lockinge Park, Berkshire.

CALADIUM.—These ornamental-leaved plants are in active growth, and need strict attention in watering. When the pots are filled with roots stimulants should be used, or the plants will soon deteriorate. Diluted soot water is an excellent stimulant for Caladiums, and it helps in a great measure to intensify the colouring of the foliage. Some of the larger plants may need their leaves regulated and tied neatly to stakes. Caladiums should on no account be exposed to bright sunshine, or the leaves will be scorched; on the contrary, they must not be shaded to excess.

CANNA.—For ordinary decorative purposes Cannas are best grown in pots about 6 inches or 7 inches in diameter. They must, however, be very liberally treated in the matter of watering and feeding, or many of the plants will fail to flower. If it is necessary to repot the plants, use a rich compost and make the soil firm. The plants may be grown in an ordinary greenhouse.

FORCING SHRUBS. Azaleas of the Ghent and mollis sections should receive attention during the next few weeks, for neglect of the plants now will have a prejudicial effect on next season's flowers. Specimens which have not been repotted this year should be given liquid manure made from farmyard dung and soot water; the stimulant should be given at every alternate watering. Syringe the plants vigorously every evening during hot weather, and, should red spider be noticed on the foliage, use an insecticide late in the evening, repeating the syringing every third evening for a week or ten days. The pots should be plunged in ashes in a position which is well exposed to the sun. Lilacs which have been forced should be planted out without delay, and the same remark applies to all forcing plants which are intended to be planted in the open. Keep the roots well supplied with water till they become established. Plants of Prunus triloba have completed their growth, and may be plunged in a bed of coal ashes out of doors.

GARDENIA.—Plants of Gardenia may either be grown in pots or planted out. In any case, they should be grown fairly close to the roof glass. Considerable heat and moisture are necessary while the plants are making their growth, and the foliage should be well syringed with tepid rain water twice daily in hot, sunny weather. Established plants may be given stimulants on two or three occasions weekly. Mealy bug, thrip, and red spider often attack Gardenias, but all these pests may easily be destroyed by syringing the plants with a suitable specific at regular intervals. A batch of young plants should be propagated every spring from cuttings. It is not wise to retain old plants after their second season.

THE FLOWER GARDEN.

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

BIENNIALS.—If sown early, an opportunity to transplant seedling biennials may be taken, less trouble being involved to transplant small than large seedlings. Generally, spaces of 10 to 12 inches are sufficient for all biennials intended for autumn planting to develop their growth. Well-rotted manure forked into the surface will give the plants a good start, and they should be very firmly set in the ground. Summer attention consists in frequent hoeing of the soil; it is a mistake to wait until weeds have grown so much that hoeing is imperative.

PLANTING IN FIRM SOIL.—I have repeatedly found that plants recently planted which showed signs of retarded growth suffered from the soil being loose. Following foot compression there is immediate change for the better, and much labour is saved in watering. Daily watering of loose soil in hot weather is without much value to the plants, whereas moisture is retained in firm soil, and the need of the application of water obviated.

STAKING. For the past three years I have staked scarcely any hardy plants. Formerly the supporting of plants when called for the use of thousands of stakes, with their removal and storing at the end of the season, necessitated much labour, which cannot now be obtained. Accordingly, I extended a practice which was in use for a few subjects, and which consisted in removing the tips of the shoots in order to induce the plants to form bushy growth. A large number of border plants are treated in the same manner, leaving a few, of which the Phlox is one, to grow naturally. Some need knifing—the Hollyhock and the double Rudbeckia laciniata being examples. Anchusa italica needs attention more than once, as also the hybrid Lupinus of the polyphyllus class. A reaping hook enables one rapidly to decapitate the plants over a large extent of ground, and if done early the dissevered tips need not be gathered up. The beautiful double rose-coloured Godetia is treated in the same manner, which improves it very considerably, causing the plant to branch more freely and keeping it dwarf and neat. It need hardly be said that those plants, such as Spiræas, Astilbes, Hemerocallis, and others, that require no support, and which to cut over would render flowerless, are not referred to.

THE APIARY.

By CHLORIS

WHEN TO SUPER.—When the bees are very busy during May and June, the hives seeming full of bees, and the top cells of the hives have been tipped with new wax, then add the supers. It will be found an inducement to the bees to start storing above if shallow frames be first used, as the bees are always loth to fill sections. When the habit has been formed, or when the frames are three quarters filled, then the sections can be placed below the shallow frames. A great mistake is often made in connection with supering the racks are not wrapped up warmly enough. There should be no draughts in the hive. Further, the wraps and quilts, being non-conductors of heat, also help to keep the interior of the hive cool during the hottest weather, for what will keep in the heat will also exclude it. As the racks reach the point of being two-thirds to three-quarters full, a new super may be added below, leaving not more than three in all. The top crate will be the first to be removed. Always place queen excluder zinc above the brood chamber, or the queen will deposit eggs, and brood will be raised where it is not desired.

REMOVING SUPERS.—The best method of removing sections or shallow frames is to give the bees a puff of smoke, or use a carbolic cloth, i.e., a piece of calico about 20 inches square which has been sprinkled with a solution made with 1 oz. of Calvert's No. 5 carbolic in 2 oz. of water. Put the mixture in a medicine bottle fitted with a vertically grooved cork, so that the liquid, after being shaken, may fall out in drops. The great advantage of the carbolic cloth (which is rolled up when not in use and kept in a close fitting tin) is that the use of a strong disinfectant is a preventive of foul brood. Care must be taken in handling it or it will very easily blister the skin. The method of using the cloth is to unroll it as the quilt is taken off: the bees will have gone down in a few seconds, when the cloth can be rolled up and any examination made. To return to the method of removing sections after smoking or using the carbolic, the bees will go down, and a board with a "Porter bee escape" should be placed underneath the rack to be removed. By next morning it will be emptied of all the bees, and none of the cells will be found punctured, as often happens when the board is not used. The board should be put on about midday, when few bees are in the hive. Remember when manipulating bees always to stand at the back or side, never in front of the entrance, and never work among them when the weather is chilly or thunderous.

EDITORIAL NOTICE.

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.*

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 58.3.

ACTUAL TEMPERATURE:—

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, *Thursday* June 6, 10 a.m.: Bar. 30.2: temp. 67.0°. Weather—Bright sunshine.

Onion Neck Rot.

In certain parts of the country, at all events, the present season is proving unfavourable to the growth of Onions. Healthy transplanted plants put out a few weeks ago met with adverse climatic conditions, and even now, after the warm spell, are developing in a patchy manner. The rows present a very uneven appearance, and not a few of the plants have developed a weakness at the neck, which causes the tops to bend over and lie prostrate on the soil. Examinations of these plants show yellowish discoloured patches on the leaves, and these patches may be the symptoms of the disease known as neck rot, now ascribed to the fungus Botrytis allii.*

An Onion disease due to a fungus belonging to the genus Botrytis has been known for long, and often described in this country. Thus Massee described (*Gard. Chron.*, August 11, 1914) a Botrytis disease of Onions and attributed it to the work of Sclerotinia bulborum. Inasmuch as the genus Botrytis is widely distributed in the soil, it may be that more than one species attacks the Onion. In any case, both the fungus described by Massee and that now worked out in detail by Mr. Munn agree in the possession of a sclerotium stage, that is, in producing black masses of resting mycelium in the bulbs of stored Onions. Mr. Munn's observations are, unfortunately, not very helpful in assisting growers in combatting the disease. Trials with Bordeaux mixture have given promising results, but as he points out, the prostrate condition of affected plants makes damage during spraying unavoidable. He does not appear to have tried sulphuring—a practice not infrequently adopted by Onion growers in this country.

The formation of sclerotia in Onions in store is well known to growers, who will agree with Mr. Munn that the better the ripening of the bulbs, the more the foliage and necks are removed, and the more well ventilated the store, the less is the disease likely to spread.

Once in the plant, however, the fungus is difficult to check. It spreads from the neck to the leaves, and also downward into the bulb, and even into the roots. Even the flower-heads of Onions grown from seed are susceptible of attack.

Mr. Munn finds that injudicious use of artificials and excess of fresh manure and poor air-drainage of the soil, favour the development and progress of the disease.

In view of the importance of the Onion crop, it is unfortunate that disease should have declared itself so early in the season, and it is to be hoped that it will prove to be of only local occurrence. It would be interesting to know whether autumn-sown Onions are as liable to attack as are those transplanted in the spring, and also whether this year spring-sown Onions, which presumably escaped the miserably damp weather, will also escape the disease.

* *Neck Rot Disease of Onions*, by M. T. Munn, Bull. 437, New York Agric. Exp. Station, Geneva, N.Y.

NO RETURNS.—We wish to draw the attention of our readers to the recent order of the Paper Controller, which prevents the purchase by newsagents of papers on "sale or return." This will necessitate all readers of the *Gardeners' Chronicle* ordering their copies in advance, either from a local newsagent or bookstall, or from the office of the paper, at 41, Wellington Street, Strand, W.C. 2. If the latter course is adopted the paper will be sent by post each week, and the price will be 19s. 6d. for a year, 9s. 9d. for six months, or 4s. 10d. for three months, post free. Occasional readers, who have been in the habit of buying a chance copy of the *Chronicle* only now and again, will, we fear, be disappointed if they try to continue this practice after the 24th of this month, as newsagents will not run the risk of buying odd copies which cannot be returned if unsold.

SOUTHAMPTON ROYAL HORTICULTURAL SOCIETY.—The summer flower show of the Southampton Royal Horticultural Society will be held in the pavilion of the pier on Tuesday and Wednesday, July 23 and 24, 1918. There will be a stall for the sale of horticultural produce for the benefit of the local funds of the British Red Cross Society and Order of St. John. The Society has also arranged to conduct a floral stall at the Rose show, to be held at South Stoneham House grounds on Wednesday, June 26, in aid of the funds of these two societies.

THE GARDENERS' ROYAL BENEVOLENT INSTITUTION.—The Committee of the Gardeners' Royal Benevolent Institution makes an urgent appeal for support for the Fund. The enforced abandonment of the usual festival dinner has closed that source of income, with the result that there has been a deficit in the past three years of £1,000 each year. This has been met by drawing upon a small reserve, which is now nearly exhausted. Over 260 aged gardeners and wives of gardeners are dependent upon the annuity to which they were elected for life, whilst the claims for temporary assistance from distressed applicants are as urgent as ever.

U.S.A. SEED TRADE CONVENTION.—The convention of the American Seed Trade Association will be held this year at Chicago, on June 18, 19 and 20. The convention meetings will be held at the Hotel Sherman.

NEW NAME FOR AN OLD VEGETABLE.—The competition for the purpose of obtaining a new popular name for Helianthus tuberosus, hitherto known in British gardens as the Jerusalem Artichoke, has resulted in the judges—Miss ELLEN WILLMOTT, Sir FRANK CRISP, and Mr. WILLIAM ROBINSON—selecting "The Sunroot" as the new title for the plant. Ten competitors gave this as the best name, and each is awarded a prize.

PRESENTATION TO MR. G. F. HOOPER.—Mr. G. F. HOOPER, for the past nine years president of the Pershore Co-operative Fruit Market, has received presentations from the committee and members. The presentation was made by the new president, Mr. F. R. Pearson, who said that those associated with the market were desirous of showing their appreciation and affectionate regard for Mr. HOOPER, as well as to express their thanks to him for the able manner in which he had filled the office of president for the past nine years.

VEGETABLE MARROWS FOR JAM-MAKING.—Estimates made by the Food Production Department indicate that this year's fruit crops will be insufficient to supply the jam factories with the fruit required for jam-making purposes. In view of the great importance of sufficient supplies of jam being available for use by the Navy and Army, and by the civilian population, the Department is appealing to cultivators to plant immediately and on as large a scale as possible Vegetable Marrows for supplementing the fruit supplies available for the jam factories. The Department is authorised by the Sugar Commission to announce that there is no prospect of any further allowance of sugar becoming available for the household making of jam from Vegetable Marrows. Therefore, the Vegetable Marrows grown in response to this appeal should be either sold to jam-making factories or stored for use during the winter. Thousands of tons of ripened Vegetable Marrows can be utilised during the coming season by the jam manufacturers.

GEOGRAPHICAL DISTRIBUTION OF PLANTS.—At the twenty-third annual congress of the South-Eastern Union of Scientific Societies, held at the rooms of the Linnean Society, Burlington House, the new president, Sir DANIEL MORRIS, delivered his presidential address on May 29, the opening day, when he took for his subject "A Chapter in the Geographical Distribution of Plants," illustrated by lantern slides. Sir DANIEL called attention to the fact that up to the time of DARWIN it was believed that the same species of plants must have been independently created at different points, but the great Victorian scientist contended that all of the same genus originally came from the same species. That theory revolutionised geographical botany. A single seed might stock a whole island, whilst small seeds were distributed like dust by the winds. In some cases birds were much more effective agents of distribution than the wind, and even insects were able to disseminate small seeds. The part taken by ocean currents and the tides in the scattering of seeds and fruits was enormous, and the phenomena could be observed at their best in the tropics, a knowledge of beach and littoral plants being essential to accurate conclusions.

WAR ITEMS.—Lance-Corporal CECIL SMITH, Royal Irish Rifles, son of Mr. GEO. NORMAN SMITH, and grandson of Mr. THOS. SMITH, of the Daisy Hill Nurseries, Newry, is officially reported missing since April 15. Lance-Corporal SMITH, who had served three years in a North of Ireland camp, attained his nineteenth birthday the week before he left for the Front. His elder brother is an officer in the Royal Flying Corps.

—— The two sons of Mr. W. R. DEAKIN, fruit-grower and jam manufacturer, Pershore, have gained the Military Cross. Capt. W. G. DEAKIN, Royal Horse Artillery, has recently won the Cross, and his brother, Lieut. G. DEAKIN, R.E. has won the Cross and a Bar to it.

—— The late Major J. L. VEITCH was recommended for the Military Cross after his good work in the critical days of April 12, 13 and 14. The announcement that the honour was conferred did not appear in orders until after he was buried.

DRIED APPLES FROM AUSTRALIA.—The British Government has agreed to purchase 1,800 tons of Australian evaporated Apples for shipment at the rate of 300 tons a month from March to August of the current year. The price is 15 cents per pound.

ON INCREASED FOOD PRODUCTION.

CLIMBING HARICOT BEANS.

I ADVISE those who intend to grow these Beans to consider the following points before they make the attempt: Is the summer long enough for the Beans to mature, and is there ground to spare for a chance crop; also will Bean-sticks be available, and their cost? We may rely on Potatos, Onions, Carrots and Leeks as certain crops, but success with climbing Haricots is doubtful. Last year I grew four rows, each 40 yards long, of these Beans. I tried some of the young pods cooked green, but they were tasteless, and before a good crop of Beans had formed in the pods early frosts appeared. I do not mean to imply that the crop was a failure as a whole, but these Beans are not worth growing for winter use by allotment holders and others who have only a little ground.—*C. Dodds, Holy Well Park Gardens, Ipswich.*

DAMAGING CROPS AN OFFENCE BY LAW.

WITH the concurrence of the Home Office, the Board of Agriculture has obtained an amendment to the Defence of the Realm Regulations by which it has been made a summary offence to damage growing food crops.

According to the Food Production Department representations have been received from various parts of the country to the effect that in view of the large extension of cultivation the existing legal provisions are not sufficient safeguard for the farmer's crops. In future, any person who without lawful authority or excuse damages any growing crop or any hedge or fence on any agricultural land, is liable to a fine of £100 or six months' imprisonment with or without hard labour, or both. The offence is triable by a Court of Summary Jurisdiction, but a prosecution can only be instituted by a police officer or by a person authorised by the Government Department concerned. No notice need have been displayed on the land in question to prove an offence when damage has been committed. If the damage is done by a crowd (which frequently happens when aeroplanes alight on cultivated land), any member of the crowd is deemed to have caused the damage unless he proves the contrary.

It will be noted that the regulations strengthen the law of trespass between allotments or field gardens and farms. It is an offence to trespass upon an allotment where a warning notice in the prescribed terms has been duly displayed, whether actual damage to crops or fences has been done or not. Only where damage is done has the farmer the holder of agricultural land or immediate remedy against the trespasser. All land which has been taken over by a Government Department or any body or person authorised by a Government Department is protected exactly in the same way as allotments or field gardens whatever the purposes to which it may be put, that is to say, entry thereon without lawful authority or excuse is in itself an offence.

CATERPILLAR ATTACKS.

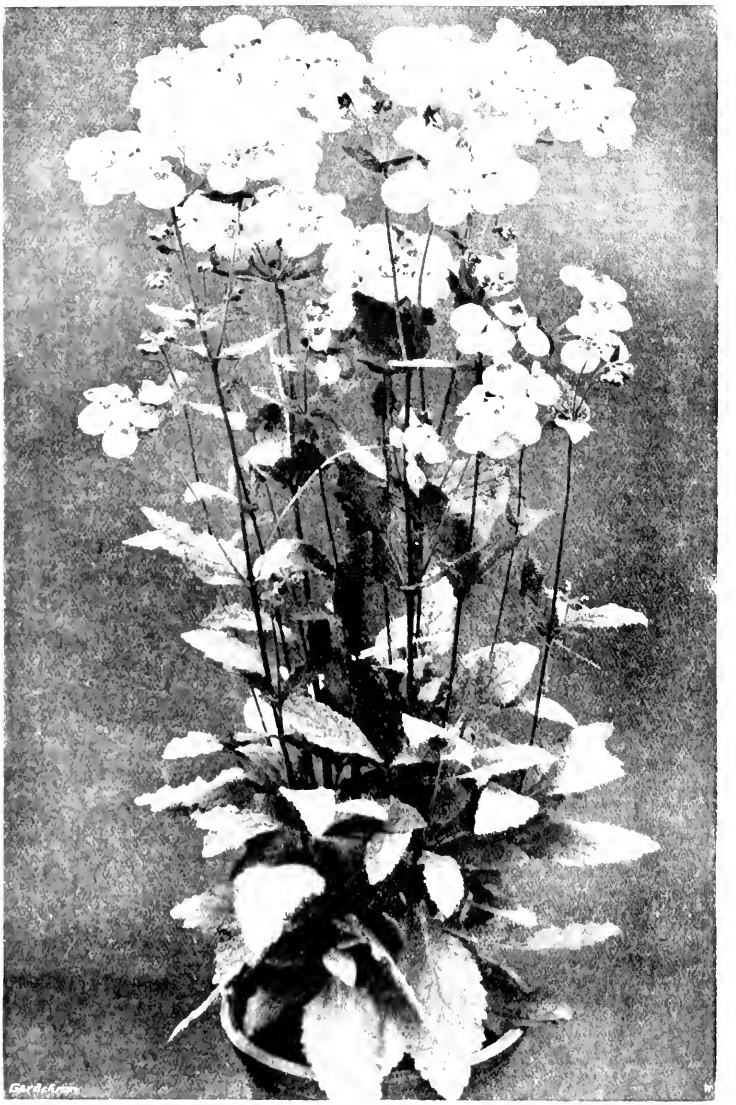
FRUIT trees are suffering from bad attacks of caterpillar in many districts, and fruit growers are urged to spray their trees without delay with a solution containing 1 lb. lead arsenate paste to every 10 gallons water. This spray fluid, if applied properly, will kill the caterpillars and prevent further defoliation. The application should be made in a fine spray sufficient to wet the leaves without drenching them.

Care must be taken that no vegetables or green Gooseberries grown in the neighbourhood of the sprayed trees are gathered for consumption within a month of the application, as lead arsenate is a very poisonous chemical; nor must trees in full bloom be sprayed, as otherwise bees and other insects useful in pollinating flowers may be killed.

HOME CORRESPONDENCE.

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

ANEMONE NEMOROSA ALLENII (see p. 229).—The soil of my present garden is heath-like and, apart from being exceedingly light, quickly becomes dust dry. Anemone nemorosa Allenii while growing and increasing freely, never has the beautiful colour it assumed in my old garden in Middlesex, although the vigour of leaf and rhizome is equal, if not superior. In the variety Robinsoniana there is also an appreciable falling off in colour, while vigour and increase of growth is well maintained. The one that has lost nothing in respect of colour and grows and increases more freely than ever is purpurea, and a group of plants bearing a hundred or so of its lovely blue flowers—the varietal name is a misnomer so far as the expanded flowers go—has been a beautiful picture this spring. Generally, however, finer colour and greater vigour in these plants follow planting in cool, moist, or even wet loams; a condition of things which synchronises with those in which the typical kind is often found wild. Dry, heath-like soils are only favoured by the plant, while in exposed positions in such ground the flowers are shortlived. Hence there is more than one reason for planting these Anemones in moist places. Transplanting may be done at any moment now; the one thing to avoid is the rhizomes becoming dry.—*E. H. Jenkins, Surbiton, Surrey.*



[Photograph by E. J. Wallis.

FIG. 101.—CALCEOLARIA MEARDII: FLOWERS YELLOW. (See p. 234.)

LEATHER-JACKETS.—Referring to the statement in *Gard. Chron.*, p. 218, that leather-jackets are difficult to eradicate, a person present at a lecture given at the Reading University

College stated that he had covered the whole of his plot with the light-greenish ammonia from the local gasworks, and after a time dug it and planted his crops as usual. Everything flourished, and roots especially, such as Potatos, Onions and Turnips, but Parsnips, though fine, when dug up had leather-jackets sticking half-way out of them. Some present stated that they were afraid to use ammonia, and thought it would burn the vegetables. *L. J.* [Might not the speaker have confused ammonia with gas lime? —EDS.]

PROLIFIC PEAS.—Growing here in a cold house we have three late Queen Peas, which at the time of writing are 4 feet 6 inches in height with haulms one quarter of an inch thick. These Peas have thrown out ten extra haulms, all of which are carrying flower-buds. The three plants are together bearing about 65 pods, flowers and buds, with a goodly promise of a fair number more. What appears to be remarkable with regard to the above Peas is that the seeds were in the pods on the haulms in the garden up to November 5, 1917, in a green state, and quite eatable, but were found to have sprouted. Out of curiosity the Peas were sown the next day, November 6, in a 6-inch pot, and grown in a temperature of approximately 55°. Rather surprisingly, the first one made its appearance above the soil on November 15, the others following in a day or two. The plants were transferred to the border in the cold house about the middle of last December, with the above results. *A. Bagg. Bishop's Hall Gardens, near Romford, Essex.*

SOCIETIES.

ROYAL HORTICULTURAL.

Scientific Committee.

MAY 23.—*Present:* Mr. E. A. Bowles, M.A. (in the chair), Dr. A. J. Voelcker, Messrs. W. Hales, J. Fraser, W. C. Worsdell, E. J. Allard, J. W. Odell, and F. J. Chittenden (hon. secretary).

Ornithogalum refractum.—Mr. Worsdell reported that he had examined the Ornithogalum from Salonika shown at a recent meeting by Mr. Bowles, and had come to the conclusion that it was O. refractum.

"Thorn" Apple.—Mr. Worsdell showed flowers of the curious Apple called "Thorn" Apple shown some time ago from Over Wallop. The flowers had all the petals and stamens converted into sepals, the "fruit" being formed of the fleshy bases of the latter. The ovary was apparently normal.

Paeony from Salonika.—Mr. Bowles showed a flower of a dark wine red form of Paeonia officinalis from a plant collected in Salonika.

Primrose with foliose corolla.—Mr. Bowles also showed a Primrose with a corolla with green petals and midrib and veining of ordinary leaves. The form came originally from Messrs. Cocker, of Aberdeen. The calyx was more or less dialysed

CROPS AND STOCK ON THE HOME FARM.

MANGOLD.

MANGOLD seed germinated splendidly, the plant coming through the soil in remarkably short time where sowing was done in favourable conditions and fine soil. The Mangold loves sunshine, hence the favourable good initial start. Unfortunately the Turnip fly had attacked the seedlings in the majority of cases that have come under my notice, in some plots destroying patches of the plants, and in others wilting the leaves badly, giving a check to growth. The best method of checking this pest is to disturb the insects in some way; rolling the field early in the morning while the dew is still on the leaves is successful. Where the plant is large there is, however, a risk of crushing the leaves by the roller. Horse-hoeing between the rows or flat hoeing is useful in that the moving of the soil accelerates growth, and naturally has a double effect on the plant.

In small areas spraying with petroleum emulsion or drawing tarred bags over the plot would destroy much of the fly, but it would be a difficult matter to treat acres of the plant in this way. Where no manure was used at sowing time, sow evenly over the plot half a hundredweight of sulphate of ammonia per acre: the fertiliser will give a fillip to the plant and hasten growth out of harm's way.

HAYMAKING.

In southern counties grass cutting is in full operation. The crops of Italian Rye grass, Clover, Trefoil, Sainfoin and meadow grass have grown very fast. It is not wise to delay the cutting of these crops for too long, as when the crop is old the quality of the hay is depreciated. Field grass, as Sainfoin, Clovers, and the various grasses, does not require so much manipulating to dry as meadow grass. One turning is sufficient before the crop is collected for carting: in the case of Sainfoin and Clover, repeated turning breaks the leaf, which is the prime part of the hay.

With a scarcity of labour more use should be made of machinery, such as grass cutters, swath turners, side-rakes, and sweeps: the use of the last in many instances dispenses with carting entirely when the rick is made in a convenient part of the field. Swath turners are admirable labour-savers, and by their use a stout nag horse will turn twenty acres in a day much better than a dozen men or women can do the same work by hand.

Meadow hay provides the best food for dairy cows and nag horses. The grass should not be too old when cut, neither should it be allowed to become too dry before it is put into the rick. Sufficient heat should generate through the whole to infuse an aroma when cut from the rick, and the colour should be even then green. Some persons favour the building of small ricks. I prefer one of twenty tons. The larger stack is economical to build and thatch, and there is very little waste at the top, bottom, and sides. The shape of a rick is an important matter. A flat roof admits moisture under the thatch, spoiling several inches of hay. I know of no better style of rick than that practised in Hertfordshire, which is sharp pitched. I have never seen "fusty" hay from the roof of such a shaped rick. Directly a rick has settled down the sides should be tucked and shaped and the roof made up with the tuckings, which should be raked down quite smooth to ward off rains until the whole has settled sufficiently for thatching.

When the first heating has taken place thatch the rick thickly at once as a safeguard against heavy rains. Where obtainable, Dutch barns are a boon, saving labour in many ways. Into these the hay can be carted a little at a time and with safety. *E. Molyneux*

ANSWERS TO CORRESPONDENTS.

ABNORMAL DELPHINIUMS: *A. T. H.* The flowers you send are what is known as "Pelorie," a not uncommon peculiarity, especially among normally zygomorphic flowers. Apparently all the flower-forming capacity of the plant has become concentrated at the point of the spike, instead of being distributed along it. As the condition is apparently hereditary, and is by no means an improvement, but rather the reverse, we should advise you to dig up and destroy all the plants displaying it.

CLOCK GOLF: *G. R. R.* Form, on a smooth lawn, a circle having a diameter of from 25 to 35 feet. Divide it at the circumference into twelve equal parts, and number the divisions like the dial of a clock. Sink a hole 3 inches across and 4 inches deep at a spot inside the circle, near the figure six on the dial, placed in such a way that no two of the twelve points are at exactly the same distance from it. The art of the game is to "putt" a golf ball into the hole in the fewest possible number of strokes while playing from the twelve points around the circle. Another method of marking out the ground is to set out twelve points, numbered one to twelve, quite irregularly over the lawn, arranging them so that no two are equi-distant from the hole.

FLY ATTACKING POTATOS: *Hortus, Mansfield* The insect attacking your Potatos is the Potato flea beetle (Psylliodes affinis). Dust the plants by means of bellows with Bclummite.

LEAF SOIL: *M. M.* The leaf-mould seems quite suitable for mixing with potting soil, but should not be used by itself. It should also be rubbed through a fine sieve before being mixed, as many of the leaves are not sufficiently decayed to be of any use. It is not possible for us to ascertain whether any acid or poisonous substance has been sprinkled over it, but we do not think this can be the case, as two or three healthy seedlings of weeds were present in the sample sent.

MARROWS AND CUCUMBERS: *M. G.* For planting Marrows, make a hole 2 feet wide and 1 foot deep, and fill it with a mixture of half partially-decayed dung and half soil, placing the spare soil around the hole to form a basin 18 inches in diameter. Frame Cucumbers should be planted in a similar compost to that for the Marrows, adding a covering of the same material 1 inch deep every time the roots appear on the surface.

NAMES OF FRUITS: *F. F.* Hormead Pearmain.—*H. H.* Norfolk Stone Pippin.—*E. C. K.* Broad-eyed Pippin.

NAMES OF PLANTS: *Conifers, P. T.* 1, Abies nobilis: 2, Pseudotsuga Douglasii (Douglas fir).

OUTSIDE VINE BORDER: *Miss G.* Should the weather continue dry, your outside Vine border would be benefited by a light mulching of partially decayed animal manure, after pricking up the surface with a fork, 1 inch deep, and then giving a heavy watering over the manure, say, six gallons to the square yard, in two applications. When the rods are 4 feet apart, three leaves may be left beyond the bunch, which generally appears opposite the fourth or fifth leaf. If closer than 4 feet, only two leaves should be left. Remove all sub-laterals excepting the one (should there be one) springing from the base of the lower leaf-stalk, and keep this stopped to one leaf.

RAISING BRIARS FROM SEED: *Rosa Canina.* There is nothing special to observe in the harvesting of Briar seed. Gather the heps when they are quite ripe and bury them in a heap of sand. The sand should be moist and kept indoors where birds and mice cannot reach the seeds. Rub out the seeds, and sow them thinly in shallow drills in a sandy compost, if possible, in a frame where birds and mice cannot reach them. The seedlings will appear in about three months from the time of sowing. Do not allow the soil of the seed-bed to become dry, but an excess of moisture is harmful. When the seedlings are about 2 inches high, transplant them in sandy soil in rows made 1 foot apart, and place the plants about 1 inch apart in the rows, or wider if there is plenty of space. It is well to sow early in the year, or even in December, if you can keep frost out of the frame

RED SPIDER ON PEACH TREES INDOORS: *J. R.* If red spider is still present on the trees after syringing with clear water, use an insecticide such as Quassia extract. The stock, the variety or the condition of the roots may be the cause of the trouble; the roots should be lifted in the autumn and some of the old soil replaced with fresh compost.

SPONGE WASTE: *Dr. S., Bombay.* Sponge waste may be purchased from Messrs. Cresswell Brothers, sponge importers, 18 and 19, Red Lion Square, W.C. 1.

VINES: *Kuban, Dublin.* In reducing the number of leaves on the Vines, first remove all laterals but one from each spur, and all sub-laterals excepting the one springing from the base of the lower leaf on the remaining shoots, keeping this shoot stopped to one leaf. In a few days' time you might shorten the shoots a little, if the leaves are still crowded, but the removal of a large quantity of leaves from these shoots at one time would check the growth of the fruit. When the rods are below the supporting wires, it is sometimes possible to sling them on wire hooks some inches lower.

Communications Received. — R. W. & S.— C. H. P.—J. P.—T. E. W.—W. E. B.—M. of M.—E. M. B.—I. of J.—C. N.—J. L. W.—L. C.—B. of A.—J. B.—Experience—W. W.—S. P.-L.—White Lodge.

THE
Gardeners' Chronicle
No. 1642.—SATURDAY, JUNE 15, 1918.

CONTENTS.

ILLUSTRATIONS.

IBROXHILL ROCK GARDEN, BELLAHOUSTON PARK, GLASGOW.

WHEN the Glasgow Corporation acquired, in 1896, the western portion of the lands of Bellahouston, including the mansion-house and policies, extending in all to 178 acres, to form a public park for the south-western district of the city, it was quickly realised that the usefulness of the park would not be complete until the small estate of Ibroxhill, some 28 acres in extent, and so situated that it blocked what was obviously the natural entrance to the park from the city, was acquired also. Negotiations towards that end failed at that time, but some eight years later, when the property came into the market, the Corporation purchased the estate, and a new roadway was at once formed through the grounds to link up with those of the park. The public quickly realised the advantage, and the popularity of the park immensely increased.

Not infrequently, in the acquisition of suburban residential estates for public use, the authorities are faced with the question of the utilisation of the mansion-houses thereon. In some cases it has been found possible to utilise these successfully for such purposes as local museums, tea rooms and waiting rooms, though not infrequently they are not readily adaptable to these ends. In the case of Ibroxhill mansion, it was let for refreshment-rooms, but its proximity to shops and dwellings of the suburb militated against its success in that respect.

During the spring of 1913 dry rot was discovered in the woodwork of the house, and developed so rapidly that the occupation of the house was considered dangerous, so the tenants had to be compensated and cleared out as a matter of safety. As dry rot was present in every beam in the house from basement to ridge, the demolition of the mansion was decided upon.

A few years before this the old kitchen garden had been converted into a flower garden, and, having proved a popular resort, the Parks Committee agreed to the proposal that, when the mansion was demolished, the stones and debris might be utilised in the formation of a rock garden to add another feature in the park.

The work of demolishing the mansion was carried out by the parks staff during the late autumn and winter: and coincident therewith the outlines of the garden were laid out. The heavier stones were set aside, and the formation of the rock garden was carried out as circumstances permitted during 1914, a gardener who showed special aptitude for the work being put in charge of the arranging and planting of the garden, which was completed and opened to the public on July 1, 1915.

The photographs from which the illustrations in figs. 102, 103, 104 were reproduced were taken in June, 1917. The site of the old mansion house was prerainfall is not by any means a negligible quantity. In normal conditions the cultivation in the Glasgow locality of such ordinary plants as Aubrietias, Saxifrages, Sempervivums, Lithospermums, Pinks, Silenes, and Chieranthuses is very uncertain, as too frequently they collapse through excessive moisture in the soil during the winter, while in the case of more delicate or "miffy" subjects, such as Androsaces, it is hopeless to attempt their cultivation with the prospect of any degree of success.

The satisfactory growth of the plants in this garden has proved conclusively the fact well known to expert cultivators of Alpines—that good drainage is essential to success.

A list of the plants which have passed successfully through the past three winters in this garden would be too long to publish, but it may suffice to say that all the ordinary subjects flourish, and most of

FIG. 102.—IBROXHILL ROCK GARDEN, BELLAHOUSTON PARK, GLASGOW.

served, and the portico, which is of good design, retained as one of the entrances to the rock garden. Part of the kitchen court wall was left, also the stone-flagged floor of the kitchen, as shown in fig. 103.

Two walls of stone and turf were built to show what might be done in clothing an old unsightly wall and answer the frequent question, "What is a wall garden?" The foundation outlines of the building decided the main lines of the garden, and as no stones other than those from the old mansion were employed, the cost was only for labour and plants. It was not attempted to make the rocks the principal feature. The stones were only "the means to an end" in providing situations suitable for certain classes of plants, which in normal conditions do not thrive in a city where the soil is heavy and the atmospheric and climatic conditions are not of the purest and best, and where the the so-called "miffy" plants thrive satisfactorily. A variety of dwarf shrubs, and notably the newer Barberries, which were practically failures on the flat, are thriving amazingly on drained elevations of the rockery.

The same is true of the Broom family from the lowly Cytisus prostratus to those like Beanii, kewensis, Dallimorei, incarnatus, and the loftier albus, praecox, and Andreanus. Shrubby Veronicas and Ericas also do well, none of the plants having been killed by frost this spring, whereas those in the ordinary borders have suffered severely.

The interest displayed in this garden and the pleasure derived therefrom by the public has amply justified the Corporation in forming such an invaluable adjunct to this park, and may lead to the formation of similar gardens in other parks of the city. *Jas. Whitton, V.M.H.*

THE ROSARY

SEASONABLE HINTS.

I do not recall an earlier season for Roses than the present, and prospects look extremely promising. On June 4 I had several of the beautiful little Scotch Roses in bloom. Carmine Pillar was a blaze of colour, whilst the old pink China gave a wealth of its pretty pink flowers, and will continue to do so until the November frosts. Among the Chinas there can be no more useful kind than Comtesse du Cayla. Irish Elegance is in full bloom. One plant on an east wall is fully 8 feet high, and a bush in my Rose-walk is some 5 feet high and as much through. Neither of these plants has had any pruning this year; indeed many of the singles are best left unpruned.

Bedding and exhibition Roses should be thinned of superfluous growths. Crowded bushes only serve to give shelter to insect pests. Some plants well repay being tied out. This I do by driving pegs into the soil and attaching string to the shoot, then gently pulling it outwards and securing it to the peg. This is sometimes better than thinning out the shoots, and it encourages the development of basal growths. Soft basal growths that seem to be growing freely without showing bloom should be pinched back. They rob the flowering shoots of nourishment, and the pinching tends to harden them for another year.

Rambler Roses must not be overcrowded. If necessary, provide an extra pole or two, in order that some of the long growths may be secured to them, and thus prevent crowding on the original arch or pillar.

Many readers may have noticed a tendency to mildew on some Ramblers in past years. Drought is a frequent cause, and timely soakings with liquid manure and clear water alternately will help to ward off the disease. I have found it a good plan to make holes in the soil with a crowbar near the roots of Ramblers, but not near enough to damage the roots, and fill them with water or liquid manure. These holes may be left open for a time.

Liquid manure should be given now to such plants as need nourishment. Drills can be drawn each side of the plants, and the liquid poured in the trenches. When the drills are filled up, the soil, being loose, retains the moisture. In country districts where night-soil is available, this, applied in liquid form, surpasses all ordinary manures.

The soil of the Rose beds should be kept quite loose by frequent hoeing. A good tool for this purpose is the "Andyho." One end is arrow-shaped, the other wedge-shaped, and, being weighty, it opens the soil deeply.

Green fly is very troublesome this season, and needs much attention, but if timely spraying be carried out the pest should cause no concern. The leaf-curl saw fly has also been troublesome in some gardens. The foliage becomes twisted up in a spiral, and gradually perishes. Spraying with nicotine wash is the best remedy.

Where beetles and ground insects abound I would advise a dressing of "Tipulite." This is a fine soil fumigant, and quite harmless to plants.

Stocks for budding should be kept growing, and by the end of the month buds may be inserted. Standard Briar stocks should have side-growths reduced to three or four. Dwarf stocks should be slightly earthed up to keep the bark moist.

Polyantha Roses potted up in autumn should be plunged now in the beds intended for them. They will give a good display of bloom, and in October may be removed to cold frames ready for placing in the forcing house after applying a top-dressing.

Pot Roses that have finished flowering may be re-potted now. It is the best time to attend to Tea Roses, but the Hybrid Teas may wait until September. Personally, I do not favour too much re-potting. I have some pot Roses that have not been re-potted for four years, and they have done splendidly this season. Give the plants a top-dressing in autumn, and see that the drainage is perfect. *Experience.*

FIG. 103.—IRONHILL ROCK GARDEN, BELLAHOUSTON PARK, GLASGOW, SHOWING THE PORTICO OF THE OLD HOUSE AND THE FLAGSTONES OF THE KITCHEN FLOOR.

(See p. 241.)

CLAY CHALLENGE CUP FOR NEW ROSE.

THE Royal Horticultural Society offers the "Clay" Challenge Cup for a Rose not in commerce, possessing the true old Rose scent, for competition at the fortnightly meeting in the Drill Hall, Buckingham Gate, Westminster, in conjunction with the National Rose Society's meeting, on July 16. The conditions will be the same as those at the last Holland House Show in 1916; particulars can be obtained from the secretary of the Royal Horticultural Society, Vincent Square, Westminster.

ORCHID NOTES AND GLEANINGS.

ODONTOGLOSSUM GATTON PRINCESS.

ODONTOGLOSSUM QUEEN OF GATTON (triumphans × percultum), for which Sir Jeremiah Colman, Bart., received a First-class Certificate at the Chelsea Show, May, 1913, was pronounced to be probably the finest and most perfectly formed yellow-ground Odontoglossum raised up to that time, and it has never been surpassed in its class. Sir Jeremiah Colman, by crossing it with a pretty variety of O. eximium (ardentissimum × crispum) secured O. Gatton Princess, several forms of which have flowered and exhibited the dual capacity for variation noted in complex hybrids, one set having the yellow ground of O. triumphans and the other, as in the flower now sent, the white base of O. crispum, which enters into its composition twice, with three of O. Pescatorei, one of triumphans, and one of O. Harryanum. The flower is 3½ inches wide, each of the segments being 1 inch across and arranged perfectly flat. The colour is violet-mauve, with two or three thin, wavy, white lines across each segment and at the margin. The ovate lip has a dark purplish-red blotch in front of the crest and a band of thin red lines inside the margin.

APONOGETON DISTACHYUM.

THERE are few who are not admirers of the aquatic plant Aponogeton distachyum. Its fragrant, Hawthorn-like flowers, floating near the surface of the water, and continuing in succession for months, present an attraction which it is difficult to resist. The plant may be grown in any lake or pond, not too deep, and it may also be established in a small tank, or even in a tub. With a minimum of soil at the bottom, and from 10 or 12 inches to several feet of water, this Cape Hawthorn will flourish. Yet the plant has a grave defect, and the would-be possessor must be warned that it may prove a veritable old man of the sea in certain circumstances. In a pond containing Nymphaeas it becomes a pest, so rapidly does it spread, and it will eventually choke and destroy the Water Lilies, unless kept within bounds, which is a difficult thing to do. It must, indeed, be kept carefully out of any pond the waters of which drain into Nymphaea ponds, as the seeds of the Aponogeton may be carried down by the stream, and germinate in the pond so freely as eventually to lead to the destruction of the Nymphaeas. I know of a case where a pond containing a number of the finest of the hardy Nymphaeas was overrun by the Aponogeton from seeds floating down from some small pools higher up on the feeder. Several times the Aponogeton was carefully cleared out, but eventually the Water Lilies were choked, and the work had to be done all over again, the pools above being this time carefully cleared of the beautiful but all-pervasive Aponogeton. This is only one of several similar cases which have come under my notice. *S. Arnott.*

THE ALPINE GARDEN.

POTENTILLA AMBIGUA.

A WELL-KNOWN authority on Alpine flowers classes Potentilla ambigua with P. nitida and P. tonguei as the "real jewels" of the genus. The plant was, I think, more extensively grown a few years ago than it is now. It has apparently been elbowed out by novelties, many of which are less worth growing than this dainty Himalayan Cinquefoil. I have known the species for some thirty years, and have always welcomed it in its season as a bright little plant, excellent for the rock garden or even for planting in the crevices of a stone pathway. It delights to be jammed between stones in a sunny situation, and there its charmingly shaped leaves, with all the beauty of those of the other members of the Rosaceæ, and good-sized, bright yellow flowers, appeal to one's sense of dainty charm. It is not a difficult plant to grow, and, when happy, soon establishes itself among the stones. It does not like, however, to be jostled by stronger-growing subjects, and if these are allowed to overgrow it the chances are that Potentilla ambigua may disappear. It is often sold as P. dubia—a name which finds no place in the Kew *Hand List*. The species was figured in the *Botanical Magazine*, t. 4,613.

OXALIS ENNEAPHYLLA.

THE Patagonian and Falkland Islands Wood Sorrel is charming in its clustered leaflets of glaucous grey and pearly flowers. The blossoms are almost Convolvulus-like, and of a delicate pearly-white warmed and at the same time softened by a tinge of flesh pink. The plant thrives well in the corners of the rock garden. It does well planted in rich loam, and is also happy in loam and leaf soil. The rose-coloured form, named *rosea*, which we owe, I believe, to the search of Mr. Clarence Elliott, is a lovely plant, yet I think I prefer the type with its luminous white flowers, just redeemed from coldness by the tinge of pink. *S. Arnott.*

ON INCREASED FOOD PRODUCTION.

THE PRICES OF VEGETABLES.

WHEN allotments became so universal it was predicted that there would be a good supply of vegetables for all, even for those who were compelled to depend upon the greengrocer's shops. The reverse, however, appears to be the case, at all events in a south-western suburb of London where I reside. Cabbages and Cauliflowers are practically unobtainable, and for Lettuces 3d. and 4d. each is asked. What are termed greens are sold at 3d. per pound. These consist mainly of a thick stump weighing in most cases half a pound or so, with many of the leaves yellow and tough, the edible portion being very little. For Rhubarb 1s. 4d. a bundle is charged, and everything else is dear in proportion. All vegetables in the shops are in a rough and unattractive state. From the greengrocer's standpoint this state of affairs is owing firstly to the fact that the Army has taken so many men, and, secondly, to the difficulty attending railway transport. These facts may partially account for such an unsatisfactory condition of things, but one cannot help asking whether the shopkeeper, having, owing to allotments, a lesser demand for his goods, seeks to make up his loss by increasing the profits on what he does sell? At all events, it presses heavily on those unable to work an allotment. *W. T.*

CLIMBING HARICOT BEANS.

I AM one of those who have resolved on giving Climbing Haricot Beans a trial to dry for winter use. Ten months ago I made up my mind to do this. The trouble began when I sowed the seeds in boxes to the number of eight dozen. Out of this number I have got about thirty plants, good and bad. This result brought me to a conclusion similar to the experience expressed by C. Davis (p. 230), namely, that many of the seeds ripen too late to reach maturity before frost damages this tender crop. All the same, I meant to carry my design to a conclusion, and made two other sowings. The first sowing was made on May 12 and the seedlings planted out on June 1; the plants from the third sowing will soon be ready for setting out. Bamboo stakes are plentiful in our district, though somewhat dear. I was prepared for that. Horse Chestnut and Lime sticks last only one year; Bamboo canes will last four or more seasons, if tied in bundles and stored in a dry place. They are tidy, and take little room to store. The dried seeds are good, whatever the green pods may be. I have planted the Beans 2 feet apart, between Potatos, so if they fail there will be no waste of ground. *J. F.*

THE MARKET FRUIT GARDEN.

APPLE PROSPECTS.

THE outstanding feature of the present season is the disappointing set of fruit, following the very hopeful promise of the bloom. It is difficult to account for this failure, particularly in the case of Apples. They bloomed about a fortnight later than usual, and the weather at the time seemed to be all that could be desired for fertilisation. There was no frost, and the days were brilliantly sunny. There was only one heavy shower whilst the bloom was open. It is true that the wind was from an easterly direction, but it was never strong enough to make the air cool by day, though the temperature was rather low at night. Still, as it did not reach freezing point, no evil results were anticipated. Yet the set of fruit, considering the promising display of bloom, is one of the most disappointing I can remember. Only one possible reason can be suggested. Owing to the brightness of the weather the bloom was over much sooner than usual. Bees and other insects were very busy on it, but it is possible that they had not time to visit all the blossoms. However this may be, the fact remains that the greater part of the bloom dropped after the fall of the petals. Trees of many varieties that showed great promise are now quite bare of fruit, whilst others have only a sprinkling. The most satisfactory set of fruit is on Worcester Pearmain, a poor variety from the point of view of quality, but one of the most fruitful and profitable Apples for market culture. There is a fair crop on some old trees of Beauty of Bath, but the younger plantations have failed, and the same remark applies to Lord Grosvenor, Blenheim Pippin, and Allington Pippin. The reverse is the case with Mr. Gladstone, the older trees of which bore so heavily last year that their barrenness now can be understood. Cox's Orange Pippin, which gave great promise, will have only a very light crop. Charles Ross has a considerable crop, and there will be some fruit on Early Julyan, Domino, Bramley's Seedling, Bismarck, Golden Spire, Newton Wonder, and Royal Jubilee. Complete failure must be recorded in the case of Lane's Prince Albert, Duchess of

FIG. 101.—IRONHILL ROCK GARDEN, IN BELLAHOUSTON PARK, GLASGOW. THE WALL IN THE CENTRE IS PART OF THE OLD KITCHEN COURT.

(See p. 231.)

ONION MILDEW.

ONION MILDEW has made its appearance in parts of the country. As it is a disease which may seriously injure the plants and render the bulbs small, and prevent their keeping well, steps should be taken at once to hinder its spreading. This is the more important in that the demand for Onions later in the year is bound to be greater than in normal years, owing to the difficulties attending importation from abroad.

The mildew fungus may be controlled by dusting the plants early in the morning (whilst they are still damp with dew) with black sulphur or with flowers of sulphur and lime mixed in the proportion of two parts of flowers of sulphur to one of lime. Most dew falls during a still, clear night; in windy or cloudy weather dew may be practically absent. Spraying with Burgundy mixture (as advised for Potato blight) is also useful.

The mildew usually starts on autumn-sown Onions, and spreads from these by means of its spores to the spring-sown plants. The healthy plants should therefore be dusted or sprayed as well as the mildewed ones.

Oldenburg, Forge, Warner's King, and Lord Derby.

PLUMS AND BLACK CURRANTS.

The poor setting of Plums can be more easily understood. No more than 2° of frost was recorded whilst the bloom was open, but the weather was for the most part cold and dull, with a great deal of rain. In the circumstances we may congratulate ourselves on the sprinkling of most varieties secured, for reports from other districts are less favourable. Yet the set of fruit falls far short of the promise of bloom. Czar, the most regular bearer here, again has the heaviest crop. Rivers' Early Prolific carries a light crop, as does Monarch, and there is but little fruit on Pond's Seedling and Victoria. President and Black Diamond, which bloomed profusely, have failed completely. A plantation of Belle de Louvain, now grown to big trees, still fails to bear. As with most varieties of Apples, it is the older trees that are proving most fruitful.

Black Currants at one time promised well, but the fruit has since "run off" to a serious extent, possibly for want of moisture. Most of our Boskoop Giant bushes are getting past their prime, and the bud mite has made serious inroads, in spite of annual picking of the "big buds." Goddard's Monarch is so far more resistent to this pest, and now shows the best crop.

CATERPILLARS.

The plague of caterpillars is, I think, even worse than last year's. Spraying before the opening of the bloom killed thousands of the insects, and seemed to have practically cleared the trees. In the case of Plums the result remains satisfactory, most of the trees now looking healthy. This, I think, is because they were sprayed later than the Apples. Caterpillars of the winter moth and allied species evidently hatch out over a prolonged period, and early spraying, essential against aphides and Apple suckers (Psylla mali), does not affect the later batches. Spraying again, after the fall of the bloom, is generally needed with some varieties. This year the operation could not be completed before serious damage had been done in many cases. Moreover, the lateness of the blooming of Apples brought a difficulty where Black Currants are grown beneath the trees, these having got so forward as to make spraying with arsenate of lead a risky proceeding. No one seems to have established definitely how close up to gathering time one may safely use this very poisonous insecticide. Apart from the danger of poisoning the fruit, there is always the risk of spoiling its appearance by spotting, unless rain falls in some quantity before gathering time. Nicotine can be safely used, because its poisonous effect soon passes off, but this is much less effective than arsenate of lead when the caterpillars are half-grown.

Some Apple trees are completely stripped of leaves, and appear almost as in winter. On others, hundreds of fruitlets have been gnawed into and spoiled. Where spraying after the fall of the bloom has been possible it has had good results. We have used arsenate of lead alone in most cases, but with the addition of lime-sulphur at summer strength on varieties that are liable to scab disease.

There is no doubt that we are suffering very severely for the killing of birds by the hard winter of 1916-17. We shall be obliged to reconsider the question of grease-banding Apple trees next autumn, the caterpillar plague now having reached such a pitch that growers cannot afford to neglect any means of fighting it.

It is worth noting that certain varieties of Apples stand out this year as practically immune from caterpillars, though closely surrounded by infested trees. These are Charles Ross, Bramley's Seedling, Newton Wonder, Blenheim Pippin, and Royal Jubilee.—*Market Grower.*

The Week's Work.

THE KITCHEN GARDEN.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

PEAS.—Make final sowings of such varieties of Peas as Gladstone, Capt. Cuttle, Ne Plus Ultra, and Rearguard, thoroughly soaking the drills in dry weather before sowing the seeds thinly in well-prepared ground. Mulch the rows of these and midseason varieties, and give the plants liberal supplies of water and diluted liquid manure during long spells of hot weather. Whenever possible syringe all rows of Peas overhead in the evening with clear water, and well water the rows just as the first flowers open. If this practice is followed by mulching no further waterings will generally be needed. On porous soils late Peas should be grown in trenches containing plenty of manure. Do not place the seeds in contact with the manure, and gather every pod as soon as it is fit for use.

CELERY.—It cannot be too often pointed out how unwise it is to leave Celery plants crowded, either in the seed-pans or where they have been pricked out. Sturdy, well-rooted plants that are transferred to the trenches experience no ill effects from the removal. The trenches being ready, the first favourable opportunity should be taken of putting out the plants, but before the plants are disturbed they should be well watered, and watered again after they are set in the rows. Overhead waterings in the evenings of hot days will help the plants to grow rapidly and strongly. Soot dusted freely over and about the plants acts as a fertiliser, and serves as a deterrent to the Celery fly and slugs.

CELERIAC.—Small roots of Celeriac are of little value; the aim therefore should be to grow the plants as large as possible. Rough and very heavy ground is unsuited to this crop. In a dry season Celeriac requires to be watered as often as Celery, and should be given a mulching of short manure. The roots form a useful vegetable, and may be kept as late as May.

WATERING.—To maintain a succession of good vegetables it is necessary that water should be afforded the crops abundantly. In the case of dry soils much good may be done by applying mulchings of manure, short grass, or Hop-manure. Enough water should always be given at one time to soak the soil thoroughly. French Beans, Scarlet Runners, Peas and Cauliflowers will all be benefited by applications of liquid manure occasionally.

GENERAL WORK.—Potatos on warm borders are fit for use, and as they are lifted the ground should be cleaned, levelled, and made ready for another crop. Cauliflowers should be watched closely, as a few hours' exposure of the curds to full sunshine discolours them. The ground between the rows of the various crops should be kept stirred with the hoe whether weeds are present or not, and weeds in rows of seedling plants drawn out in good time. A few hours spent in surface hoeing now on bright days may save several days' labour later.

THE ORCHID HOUSES

By J. COLLIER, Gardener to Sir JEREMIAH COLMAN, Bart., Gatton Park, Reigate.

CALANTHE.—Deciduous Calanthes of the Veitchii and vestita sections are now in various stages of growth, and plants that are unfolding their leaves and rooting freely may be given more water at the roots, increasing the supply gradually as the plants make further progress. Care must still be exercised in watering specimens that are not far advanced in growth. During all their stages the plants should be kept as near to the roof-glass as is convenient, in order that they may make stout pseudo-bulbs and strong flower-spikes. Plants of the evergreen species of Calanthes, such as C. masuca, C. veratrifolia, and C. Dominyi may be repotted as growth commences. These are free-growing, strong-rooted plants, and should be given rather large pots and a more retentive soil than many Orchids require. A suitable rooting medium consists of equal parts good fibrous yellow loam and chopped Osmunda-fibre, with a moderate quantity of leaf-mould and crushed crocks. Press the soil firmly and provide a space below the rim of the pot to permit of efficient watering, as the plants when well established require copious supplies of moisture at the roots.

LAELIA.—Plants of Laelia anceps and its varieties are growing freely, and should be afforded a liberal treatment in every respect. They should not be too densely shaded, but the blinds may be lowered in the morning when the sun is shining so brightly as to cause the foliage to become warm; they should be drawn up again early in the afternoon. The house should be ventilated freely during the hottest part of the day, but closed sufficiently early for the temperature to rise to about 90°, when the plants should be syringed overhead. Late in the evening the house should again be ventilated in order to lower the temperature to about 65° by morning, as the plants do best in a cool night atmosphere. Keep a sharp watch for slugs and woodlice, as these pests are very destructive to the young roots of this Orchid.

ZYGOPETALUM MACKAYI AND Z. CRINITUM.—These Orchids are rooting freely, and need copious supplies of water at the roots. The intermediate house will suit them at this season.

FRUITS UNDER GLASS.

By W. J. GUISE, Gardener to Mrs. DEMPSTER, Keele Hall, Newcastle, Staffordshire.

PLUMS.—Plum trees in late houses usually set their fruits in large clusters, and the bunches should be thinned freely, using a pair of Grape scissors. The shoots of cordons, and trees trained on trellises need to be constantly pinched to encourage the formation of fruit-buds for next year. All leaders and shoots required for the development of the trees should be trained to the wires to allow the light and air to enter the trees. The syringe may be used daily for some time to come; use soft water, or at least water free from lime sediments. Old trees carrying heavy crops will be benefited by a liberal dressing of decayed animal manure, but care must be taken not to overdo the mulching in the case of young trees, which would be likely to produce gross growth in consequence.

PEACHES AND NECTARINES.—Houses containing the leading mid-season varieties of Peaches and Nectarines should be freely ventilated, not only during the day, but a little through the night. This airing may retard the plants a little, but to produce Peaches and Nectarines of fine flavour the trees must have plenty of fresh air. Apply a mulch to trees on which the fruit is swelling, or feed the roots with weak liquid manure, but excessive feeding will cause the trees to make gross growth, which is useless for fruiting. Syringe the trees twice a day with rain-water, or red spider will be troublesome. Syringing with weak, clear soot-water does much towards keeping the foliage clean and healthy, serving both as a stimulant and an insecticide; the trees should be syringed with it once or twice a week. The final thinning of the fruits or disbudding should be attended to at once. When training the shoots in position, see that no more are retained than are needed. Water should be given in abundance if the borders require it, up to the time when the fruit commences to colour. The last soaking usually suffices until the fruits are gathered. At the ripening stage the house should be kept dry, with plenty of ventilation day and night. The fruits on trees in late houses will now be safe for the final thinning. A few extra may be left in case of some dropping, although trees in good condition do not usually cast their fruits in June. Regulate the shoots to prevent overcrowding and cut out the most vigorous growths. If the fruit is wanted very late in the season the house should be freely ventilated on all favourable occasions. Syringing, watering, and feeding should be carried out as advised for trees in successional houses. See that the borders do not lack moisture.

APRICOTS.—The final thinning of the fruits on late trees should be carried out without delay, and with a bold hand. Young trees growing in borders usually set their fruits very freely, and sooner or later they collapse if over-cropped. Let the borders have a thorough soaking of clear water with alternate doses of liquid manure. Old-established trees will respond to a mulching of half-rotten manure. Tie in the laterals where they are required for extension and pinch back other shoots to a few leaves. Keep the trees clean and healthy by syringing twice daily with soft water, and once a week with clear soot-water.

STRAWBERRIES.—Make preparations for the layering of plants for next year's forcing. We use 3-inch pots filled with rich loam, these being plunged between the rows of plants reserved for stock purposes. Old plants are practically useless for layering purposes. Bracken provides excellent material for making pegs to keep the runners in position. Spray the runners daily during bright weather until they are established.

PLANTS UNDER GLASS.

By E. HARRISS, Gardener to Lady WANTAGE, Lockinge Park, Berkshire.

ANNUALS FOR POTS.—Many annuals are suitable for growing in pots for furnishing the conservatory or greenhouse during the summer and autumn. Although the plants are not particular in regard to soil, they will give far better results if a rich, substantial compost is provided for them. Among many which I have tried for this purpose, the following are the best: Asters, Browallia, Godetia, Clarkia, Lobelia tenuior, Larkspur, Nemesia, Statice sinuata, and Ten-week Stocks. Another sowing of Mignonette may be made now to raise plants for autumn flowering.

BOUVARDIA. If it is intended to grow Bouvardias in the open during the summer, the plants should be set in the beds forthwith. Plant them about 15 inches apart each way, and make the soil quite firm about the roots. Give one good watering after planting. Shade the plants during the hottest part of the day until they have recovered from the check caused by disturbing the roots. The shoots will need stopping on two or three occasions during the season.

CLIMBING ROSES. The young growths of Climbing Roses usually require very liberal thinning at this time of year. The work should be taken in hand in good time, or much of the energy of the trees will be wasted. Abundance of water will be required at the roots during hot weather; the foliage should also be washed every evening with the garden hose. Diluted farmyard drainings form an excellent stimulant for Roses; failing this, it will be necessary to use a concentrated fertiliser. Keep the trees free from aphis by regular fumigations.

VIOLETS. So far the weather has been unfavourable for the Violet plants which were put out in April. Unless they have been syringed each evening during the very hot weather experienced through May, red spider is almost sure to be present on the leaves. Frequent spraying with a suitable insecticide is the only remedy for this pest. The spraying should be done late in the evening, so that the specific may remain on the leaves as long as possible. Work the hoe freely amongst the plants, and remove all runners as they appear. A light dusting with well-seasoned soot previous to hoeing will have a stimulating effect on the plants, besides acting as a deterrent to insect pests.

CLERODENDRON FALLAX.—Allow this plant ample room, as crowding causes the loss of some of the lower leaves. Old plants which were re-potted in the spring should be liberally fed with stimulants when they are well rooted. These plants should carry from three to six large heads of flowers. Young plants which have been raised from seed this season should be potted on as their requirements demand. A compost formed of good fibrous loam, leaf soil, old Mushroom-bed manure, wood ashes, and coarse sand is suitable. Keep the plants growing in a warm, moist atmosphere, and spray them two or three times a day with rain-water. If red spider attacks the under-sides of the leaves syringe the affected parts with an insecticide.

THE HARDY FRUIT GARDEN.

By JAS. HUDSON, Head Gardener at Gunnersbury House, Acton, W.

GENERAL WORK.—Keep the hoe at work freely at this season to destroy both suckers and weeds, and make the soil more receptive of moisture during rainfall. Even when a mulching is applied it will do good to use the hoe for stirring it; this will assist in pulverising the mulch and cause it to be gradually worked into the surface soil. After such a stirring it will be well to take the first opportunity to give the roots of the trees a good watering, and especially in the case of newly planted trees. Let these latter be also syringed towards the evening, and it will be doubly beneficial to trees planted against walls. Endeavour to ensure good growth on newly planted trees well in advance of, and not so much in, the later months, when the wood will be ripening. There is plenty of work needing attention in the way of pinching, stopping, and regulating the growths. It is far better to do this work in advance than to allow some shoots to get the upper hand at the expense of others. I advocate a free use of the thumb and finger for pinching, not only of shoots but also of surplus fruit that can well be spared, or advance of any ultimate thinning. In the case of dessert Cherries the final thinning has to be done much earlier than with any other fruit, but this operation needs careful attention. If these Cherries are predisposed to turn yellow at the stoning period it is not safe to thin too freely or too early. The nets should be got ready for protecting dessert Cherries from birds, which may cause trouble as soon as the fruits show the least tendency to change colour. In some instances I advise fairly early netting of the trees; for example, where the Cherries fail to stone very badly, which may occur where the trees on walls are exposed to hot sunshine. Early netting will aid in keeping the trees somewhat cooler by giving them slight protection from the sun's rays.

INSECT PESTS. Insect pests are very troublesome in certain districts, and causing much damage to fruit trees. As soon as we were threatened with trouble in this respect I had recourse to spraying with Katakilla specific, and found it most effective. American blight has begun to spread during the past fortnight, but after a strong dressing of winter wash I did not expect it would prove troublesome. A strong dose now of paraffin soft-soap is a good remedy where it can be applied with a stiff painter's brush directly on the affected parts. If this is not practicable then paraffin emulsion should be sprayed on the trees. I notice that Gooseberries are being attacked by red spider. For this pest I shall use lime-sulphur spray, but not strong enough to injure the foliage. Another good and safe remedy is fairly strong soot-water.

THE FLOWER GARDEN.

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

MYOSOTIS. There are several distinct kinds of Myosotis (Forget-me-not) of great beauty, some of which propagate themselves freely from seed. Myosotis sylvatica and its white form are here established on grass. Some, including M. dissitiflora and the variety Ruth Fischer, need to be rooted from cuttings annually, but the latter variety makes little progress here, and cannot compete with other well known kinds. All should be propagated now in order to have good flowering plants for autumn planting.

FRITILLARIA. Where Fritillarias and later spring flowering bulbs and tubers are to be transplanted, they should be lifted out of the ground as soon as the foliage is yellow, and may either be planted at once or kept in a cool place until October or November. The beautiful varieties of Anemone apennina and the double form of A. nemorosa should also be lifted, divided, and replanted now. They are beautiful in masses, and succeed anywhere, either in the open or in partial shade.

PINKS.—The pretty florist forms of Pinks, as distinct from border kinds, such as Her Majesty, which are best increased in autumn, should be propagated now for transplanting in autumn. The "pipings" are drawn out of the growing flowerless shoots, and require no further preparation. They strike root freely under a variety of conditions. Some growers dibble them into prepared soil at the base of a fruit wall, and others under Gooseberry bushes. An ordinary hand light or large bell glass, with the glass blurred by sand sprinkled on the inner side while the glass is wet, gives least trouble, once the pipings have been inserted. A very large number can be rooted in a small space, an inch apart being wide enough to set them.

DAHLIA.—The planting of spring-struck Dahlia plants need no longer be delayed. There is such a variety of forms that one has only to decide which of them are most suitable for one's requirements. I find that the tubers of new varieties, which are moved into larger pots immediately they are received from the nursery, keep much better during winter when they are sunk into the ground, pot and all. When very fine blooms are desired the old plan of planting in pits filled with a rich compost is excellent. For ordinary decorative purposes a fairly fertile soil, with the plants not crowded, is all that is necessary.

THE APIARY.

By CHLORIS

SOURCE OF HONEY.—Honey itself is not gathered—it is the nectar of the flowers, which the bees collect and carry in their honey-sac to be assimilated and regurgitated in the form of honey. The source of the honey may be fairly well and accurately recognised by its colour and flavour. The flowers often exude nectar similar in colour to the bloom, but when it candies it always becomes lighter. White Clover honey is always very light, that from Lime greenish-yellow, while honey from Sainfoin is very yellow, and Heather honey varies from orange to reddish-purple. The weather and time of the year also influence the flavour; when it is warm and sunny the flavour is very much stronger than when it is cool. Clover honey is very liquid, and that from Heather is so thick that it has to be crushed out of the comb in a press. Its flavour is very pronounced.

PREVENTING SWARMING.—This is often achieved by the following method. Instead of having shallow frames in the super, use the brood frames. Take the brood frames out one at a time on a very warm day, and, as the frames are lifted out, give them a sharp shake to dislodge all the bees. Carefully examine each frame when free of bees to see if any queen cells have been started. This done, place each frame in a similar position in an empty brood chamber. Having completed the examination of all the frames, and being certain that the queen herself is in the original brood-chamber, proceed to fill it with frames fitted with full sheets of foundation. Place over it a sheet of queen-excluder zinc, and over this the brood chamber containing all the brood. Wrap up with good quilts, and as the brood hatches the cells will be filled with honey. Occasionally a few drones are hatched, and as these cannot pass through the queen excluder zinc because of their bulkiness, a corner of the quilt may be occasionally raised to permit of their escape. This method gives the queen plenty of egg-laying space, and is generally successful in preventing swarming.

USING THE SMOKER. Too often the amateur uses the smoker too much and sometimes among the frames. This is incorrect. First get the smoker going, using as fuel unglazed brown paper, corrugated brown paper, old corduroy cloth, dry, rotten wood, or anything that will easily smoulder and give off a good supply of smoke. Lift one corner of the quilt and blow a little smoke under it. When the quilt is being raised puff across the frames, not among them, and use as little smoke as possible—just enough to keep the bees under full control. When handling frames commence with the outside one and remove that first; after sliding back the division board, shake off the bees and place it on end outside the hives. This will give plenty of room to handle the other frames without fear of crushing the bees or killing the queen.

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

Special Notice to Correspondents.—*The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.*

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

Letters for Publication, *as well as specimens of plants for naming, should be addressed to the* **EDITORS**, **41, Wellington Street Covent Garden, London.** *Communications should be* WRITTEN ON ONE SIDE ONLY OF THE PAPER, *sent as early in the week as possible, and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.*

APPOINTMENTS FOR THE ENSUING WEEK.

TUESDAY, JUNE 18—
Roy. Hort. Soc.'s Cons. meet. Hort. Club Com. meets. Farmers' Club, 4 p.m.

WEDNESDAY, JUNE 19—
Lecture on Potato Growing, at Caxton Hall, Westminster, by W. Cuthbertson, 3 p.m.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 59.4.

ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, *Thursday*, June 13, 10 a.m.: Bar. 30.2; temp. 66.0°. Weather—Cloudy.

Robert Hooper Pearson.

It is with the deepest regret that we record the death, early on the morning of Tuesday last, June 11, of Mr. R. Hooper Pearson, Managing Editor of the *Gardeners' Chronicle*. Mr. Hooper Pearson's death, which was due to anæmia, will be mourned not only by all his colleagues on the staff of that journal, but by a large circle of friends. For it was given to few men to form and to hold friendships as it was to Mr. Pearson.

The secret of his character and influence was a sane steadfastness—as one who "looks on tempests and is never shaken." Combined with the serene and sure judgment which made him the fairest of colleagues and the most sympathetic of friends, was a broad sympathy with all worthy things. Devoted to his duties as assistant and later as Managing Editor, which duties he followed without intermission for upwards of a quarter of a century, Mr. Pearson was no less concerned with the interests of horticulture. To these objects he devoted his life with a singleness of purpose which won the admiration of all who knew him. His alertness of mind and vast fund of experience were given without stint in the performance of his daily task, and it is a high and great tribute to say that never did his attention to detail cause him to lose sight of the large and permanent interest of horticulture. A slip, a misprint, or small error in the pages of this journal caused him more chagrin than a personal disappointment, and it is to his watchful vigilance that the journal owes its immunity from any undue number of such errors as are almost inevitable under modern conditions of publication.

With the steadfastness of character which made him so sure an adviser, Mr. Pearson possessed to a remarkable degree the gift of loyalty to friends and colleagues. In the trying intercourse of common work the present writer can remember no occasion on which perfect harmony did not exist between Mr. Pearson and the members of his staff. If he reproved, the reproof was manifestly deserved; if he praised, the praise was well earned. Nor was there any hardness in his nature to mar the just temper of his mind. Fond of the amenities of life, he was fonder yet of its duties, and discharged them faithfully and without any sparing of himself.

It is but a little more than a year ago that we published a brief account of Mr. Hooper Pearson's 25 years' service of the *Gardeners' Chronicle*. In that record testimony is given to the feelings with which his colleagues regarded him. These feelings of admiration, regard, and affection remain and will endure, for now that he has passed away we, like all his friends, recognise that he not only possessed great qualities, but that he used them worthily. He laboured unceasingly and disinterestedly at the task to which he devoted his life, and in accomplishing that task he helped us all to discharge our own.

Mr. Pearson was born on July 18, 1866, at Brewood, in Staffordshire; his father was proprietor of the local High School, and here the son received his education. His gardening proclivities were pronounced even at an early age, and his father apprenticed him in the neighbouring gardens of Keele Hall, under Mr. John Wallis. After serving his apprenticeship, he applied for entrance to Kew Gardens as a "young gardener," and was successful in becoming a member of the Kew staff. After his two years' training at Kew, where he rose to the position of sub-foreman, he sought further experience in the Marquis of Bute's garden at Cardiff Castle, and he was always appreciative of the excellent training he received under the late Mr. Andrew Pettigrew. He then went to Patshull Hall, Staffordshire, but after a short stay there he was offered a position on the *Gardeners' Chronicle* by the then Editor, the late Dr. Masters.

Mr. Pearson was keenly interested in every aspect of horticulture, and held many offices in various societies. He was Hon. Secretary of the Horticultural Club, and during his term of office the membership increased from about fifty to some two hundred. As Press Secretary of the International Horticultural Exhibition in 1912 he contributed largely to its success. He was a member both of the Scientific and of the Floral Committees of the Royal Horticultural Society: an active supporter of gardening charities, he held a position on the executive of the Royal Gardeners' Orphan Fund for many years, and took a real interest in the children who were supported out of the funds. He was instrumental in helping to found the British Gardeners' Association, in the hope that it might prove of benefit to members of the profession. During the year 1911 he held the office of President of the Kew Guild, an association which always commanded his warmest sympathy.

As an author, his best-known work is *The Book of Garden Pests*, but his name became famous through the popular series of books known as *Present Day Gardening* series, edited by him, and written by authors chosen by him as specialists on the different subjects. At the time of his death he was engaged on several horticultural works, but during the past year his strength was scarcely equal to any undertaking of a literary nature.

He married in September, 1893, Miss Jeannie Evans, daughter of James Evans, of Llangattock, Lingoed, Abergavenny. He has one child, a daughter; both his wife and daughter survive him, and will have the sincere sympathy of all in their bereavement. The funeral will take place at Putney Vale Cemetery to-day (Saturday), at 12.30 p.m., and will be preceded by a service at St. Anne's Church, Wandsworth, at 11.45 a.m.

FLOWERS IN SEASON.—Messrs. R. WALLACE AND CO., LTD., have sent us a box of Irises of the June-flowering section, classed as late-flowering bearded Irises. These beautiful flowers are very popular garden plants, and grow well in nearly all kinds of soil. The section embraces the German Irises, I. squalens, I. plicata, I. neglecta, I. amoena, and other species, but the hybrids are now so complex in their parentage that it is difficult to keep them distinct. Of the very large number of varieties sent, the following specially appeal to us.—Lady Foster, a very large flower, with pale blue standards and light, bluish-violet falls; Isoline, with lilac-pink standards and purplish-old-rose falls; Alcazar, light bluish-violet standards and deep purple falls; Troost, a rosy-purple variety with paler-coloured falls veined with violet; Lohengrin, a large flower of the pallida section, of a beautiful rose shade; Ma Mie, white, tinged with blue at the margins; Hiawatha, with pale lavender standards and royal purple-blue falls, with a lighter tone at the edges; and Oriflamme, one of the largest varieties, the large standards coloured bright blue, with falls of dark purple.

DAHLIA TUBERS AS FOOD.—Monsieur BUYSMAN, Curator of the experimental Botanic Garden at Lawang, Java, writes to us on the subject of Dahlia tubers, which he observes are edible when cooked. He states that in Mexico they are used everywhere as food.

LECTURE ON POTATO-GROWING.—A lecture will be delivered at the Caxton Hall, Westminster, London, on the 19th inst., at 3 p.m., by Mr. W. CUTHBERTSON, V.M.H., on "Potato Growing: Autumn Work in Lifting and Storing." The Right Hon. R. E. PROTHERO will occupy the chair. Admission, so far as the seating accommodation will permit, will be by ticket to be obtained by written application, enclosing a stamped and addressed envelope to the Secretary, R.H.S., Vincent Square, Westminster, London, S.W. 1. Fellows' tickets will not admit, as it is necessary to know beforehand the amount of seating required. Printed copies of the lecture, with illustrations, will be distributed at the end of the meeting.

GARDENERS' RATIONS.—The Ministry of Food has decided that a gardener mainly engaged in the production of food is eligible for supplementary rations, as follows:—He must either be employed in the production of food on at least one acre of land; or be engaged throughout the whole working day on the production of food. All other gardeners are graded "B."

PLANT IMMIGRANTS.—Among plants and seeds reported * as introduced recently into the United States is a dwarf Peach procured by the Rev. GEORGE CAMPBELL in Southern China. The Peach is treated as a pot plant in that country, and is said to come true from seed. The Rev. G. CAMPBELL reports that one small tree 15 inches high, with a stem no larger than a lead pencil, ripened five good-sized, edible, clingstone Peaches. The behaviour of the plant out-of-doors at Chico suggests that it may be of value in the production of a dwarf race of Peaches.

MAIZE SEED.—A word of warning is necessary to those who may intend to endeavour to save seed of early-ripening varieties of Sweet Corn. Maize is one of the plants which must be cross-pollinated if the vigour of the stock is to be maintained, and therefore seed should not be saved for sowing purposes unless raised from cross-pollinated plants. Cross-pollination is, however, easily effected. The male blooms are removed from the plant which is to act as seed-bearer. The female inflorescence is covered, and as soon as the tassels (styles and stigmas) are well developed a male inflorescence with ripe pollen is drawn like a brush over the tassels and the female flowers again covered. The pollina-

* *Plant Immigrants*, No. 133, May, 1917.

tion should be repeated on the following day, and the operation should be carried out in bright, sunny weather.

ANOPHELINE MOSQUITOS.—In connection with possible risks of malaria being acquired in this country, the Local Government Board is anxious to collect as much information as possible regarding the prevalence and distribution of anopheline mosquitos in various parts of the country. Naturalists and field botanists could give much valuable help in the matter by keeping notes and records of any adult insects which they may meet with during natural history searches, and also of the detection of anopheline larvae. In making records the following are important:—Adults: Date: hour of collection: place (if in a building specify its nature): condition of weather and temperature: whether few or abundant. Larvae: Date; hour of collection; locality; nature of collection of water (natural or artificial); nature of breeding-place (shady pools, open collections of water, presence or absence of weed, fish, etc.).

SEED IMPORTS TO AMERICA.—A large decrease in the seed exports from England, to the United States for the last year, is indicated by figures recently issued by the Department of Commerce. The amount of the seeds exported is given at 1,119,114 lbs. for 1917, as compared with 4,568,203 lbs. for 1916. The value is given at 136,903 dollars for 1317, and 384,947 dollars for 1916.

DESTROYING TREE STUMPS WITH ACIDS.—It is generally believed that tree stumps can be got rid of, or at least rotted so that they will burn freely, by treating them with strong acid, such as sulphuric or nitric acid, and waiting a few weeks. In order to test the matter, a series of experiments was undertaken by Mr. F. B. GUTHRIE, chemist, in 1915, and deep auger holes were bored in selected stumps of tough timbers, some green and some dry. Quantities of the chemicals named, separately and together in varying proportions, were poured into different stumps. The results were noted regularly for six months, at the end of which time an examination showed that in the case of both green and dry stumps the acid had no appreciable effect. The average cost per stump worked out at 1s. 9d., which included labour at the rate of 7s. per day; it is an open question whether men could be found who would use two such dangerous acids at that figure. Saltpetre has also been said to be useful in preparing dead timber for burning off, but numerous private experiments go to disprove the theory. *Queensland Agricultural Journal.*

AN INDIAN "PRAYING PALM."—We learn from *Nature* that another Indian "miracle" has been explained by scientific investigation. The *Pioneer Mail* of January 11 reports a lecture by Sir J. C. BOSE on "The Praying Palm Tree" of Faridpur. While the temple bells call the people to evening prayer, this tree has recently been seen to bow down in prostration, and to erect its head on the following morning. Large numbers of pilgrims have been attracted to the place, and offerings to the tree are said to have been the means of effecting marvellous cures. Sir J. C. BOSE first procured photographs which proved the phenomenon to be real. The next step was to devise a special apparatus to record continuously the movement of the tree by day and night. The records showed that it fell with the rise of temperature and rose with the fall. The records obtained in the case of other trees brought out the fact that all the trees are moving, each movement being due to changes in their environment.

THE FLY PEST.—The British Museum recommends the use of baited wires as a means of keeping down the house fly. The mixture for the bait consists of castor oil 4 liquid oz., crushed resin 9½oz.; or linseed oil 4 liquid oz., crushed resin 7½oz. It is recommended to heat the oil and then stir in the resin. The mixture is painted on wires about a yard in length, leaving a handhold at one end unpainted, and making a hook at the other for hanging the wire vertically. When covered with flies the wire is passed through a flame to clear it of the used mixture and dead flies. Afterwards fresh mixture is heated and the wires painted as before.

A NATIONAL FLOWER FOR MASSACHUSETTS.—The school children of Massachusetts, U.S.A., have indicated their choice of Epigæa repens (the trailing Arbutus) as the State floral emblem. This flower received 107,617 votes, or 49,409 more than its nearest rival, the Water Lily. The number of children who voted was 241,864. The canvass was made under the direction of the State Board of Education of the Legislative Committee on Agriculture. Although the committee is not formally bound to abide by the decision of the children, it is probable that it will do so, and report to the Legislature a bill designating the trailing Arbutus as the official floral emblem of the State.

THE LATE ROBERT HOOPER PEARSON.

DANDELIONS IN LAWNS.—A writer in an American paper states that if Dandelions are dug by hand and a small pinch of White Clover seed placed where the weeds have been removed, the seed will grow and assist in crowding out the Dandelions. White Clover has been found one of the best lawn seeds for this purpose, as it may be scattered on top of old grass to thicken the stand. Yet it must be remembered that for tennis lawns Clover is almost as undesirable as Dandelions.

POISON GAS AND HORTICULTURE.—It does not require much imaginative foresight to predict that the use of poison gas in the present war may be followed by an application of the practice beneficent to horticulture. Our reasons for suggesting that this will prove to be the case are simple. Poisons are, to some extent, differential in their action, and hence it should not be impossible to discover a poison which, whilst harmless to vegetation, is deadly to animal life. Further, the leaves of most plants close their stomata at night, and when foliage is in that condition it is not easily injured. Horticulture has already had experience with poison gas, in the form of hydrocyanic acid, vaporised sulphur, and nicotine, and also in the form of carbon-bisulphide and other chemicals used for soil sterilisation purposes. Hence the principle is not new, but what is new is the fact that poison gas officers have, from their tragic war experience learned to manipulate and control the poisons in an extraordinarily accurate way. So much so that we believe they can, like CANUTE, command the gaseous sea they liberate, and, unlike that potentate, ensure that their commands are obeyed. By making use of suitable conditions of weather it is stated that the distribution of gas may be controlled within very narrow limits. Hence instead of the present-day laborious method of syringing, the future may see our orchards equipped with poison gas cylinders, and the insect pests of the orchards destroyed like the hosts of SENNACHERIB, and by no dissimilar means. Whether the problem of soil sterilisation will, in the future, be solved in like manner we lack the hardihood to predict, but there would seem to be no *a priori* reason why it should not. We believe that some experiments along these lines have already been carried out, and also that others are in progress. Should they prove successful it will once again have been shown that "there is a soul of goodness in things evil."

WAR ITEM. Pte. H. L. DOUGLASS, R.A.M.C., London Field Ambulance, has been missing since March 28, and is now believed to be a prisoner of war in Germany. Prior to enlistment in August, 1915, he was employed as foreman at Heacham Hall Gardens, Norfolk.

PUBLICATIONS RECEIVED.—*The Carnation Year Book, 1918.* Edited by J. S. Brunton, British Carnation Society. (T. A. Weston, Floradale, St. John's Road, Orpington.) Price 1s. 6d., post free.—*Allotments far All.* By Gerald W. Butcher. (London: Geo. Allen & Unwin, Ltd.) 2s. net.

RHODODENDRON SPINULIFERUM.

SOME Rhododendrons differ widely from what is regarded as the normal type of the genus, and R. spinuliferum (see fig. 105) is one of the most divergent species. Specimens were shown in flower by Mr. Reuthe at a recent meeting of the R.H.S., and many, on seeing them for the first time, expressed doubt as to the plant being a Rhododendron. The allied genus Erica, and particularly the South African species, offer an even wider range of variation than that genus. R. spinuliferum may never obtain a First class Certificate as a garden plant, and yet it has claims to horticultural favour in the bright cinnabar-red colour of its tubular flowers as well as its unlikeness to garden Rhododendrons. The species was introduced into cultivation in 1907 by Messrs. Vilmorin, Andrieux and Co., and specimens flowered at Les Barres in 1910. It has been grown for some years at Kew, where, however, it requires the protection of a greenhouse or frame. According to Forrest the species grows in shady thickets on the hills in Yunnan at an altitude of 6,000-8,000 feet. Mr. Millais describes it as a shrub of tall, thin habit up to 6 feet high, making slender shoots of 12 inches or more annually. In Mr. J. C. Williams' garden at Caerhays this Rhododendron is grown in shade against a wall, where it does well. In the form of its flowers R. spinuliferum resembles R. Keysii, a Bhutan species, of which there are big bushes in South Cornwall, Ireland, and other parts of Great Britain, but the habit and leaves are very unlike, and the flowers of R. Keysii are borne in axillary clusters on the old wood, whereas in R. spinuliferum they are in terminal clusters, usually four in a cluster.

FIG. 105.—FLOWERING SHOOT OF RHODODENDRON SPINULIFERUM.

HOME CORRESPONDENCE.

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

IRISES AND DISEASE.—Even at the risk of incurring the title of "faddist," which Mr. Watson bestows on those who transplant rhizomatous Irises in summer, I cannot let his remarks, on p. 233, pass unchallenged. It has probably been my lot to plant and replant as many kinds of Irises in the last ten or fifteen years as most gardeners deal with in a much longer period, and I doubt very much whether it is really "so utterly opposed to nature to dig up rhizomatous Irises when in full leaf" as Mr. Watson appears to imagine. If he will dig up a plant that is just going out of flower he will find that the roots attached to the main axis which ends in the flowering stem are brown and withering. Obviously they have done their work in nourishing the stems and the flowers. It is to the lateral growths that we must look for flowers in the following year, and here he will find that root-growth is beginning. There may be young, unbranched fibres a few inches in length, and, besides, there are sure to be a number of points of new roots just pushing out from the rhizome. Surely, then, this is the moment at which transplantation may be carried out without detriment to the plant. Mr. Watson does not tell us when he would transplant such Irises, but presumably he would do it in the autumn or in the early spring. In the former case, root-growth has ceased for the year, and the plants lie in the ground through the winter without taking hold of it, and are often actually lifted out of the soil by frost and thaw, while in the latter case the flowers for the coming season are either entirely sacrificed or at least stunted. I wish Mr. Watson could have seen my garden a week or two ago. There were many beds of Irises in full flower, although all the plants in them were transplanted in June, July and August last year. On the other hand, there were a few in which the Irises had had to be planted later. In these the plants were stunted and the flower-stems few. For the disease from which apparently the Kew collection is suffering there is a very simple remedy, namely, superphosphate of lime. I must confess that my garden is never entirely free from traces of this disease, but, on the other hand, I think I can truthfully say that it has never yet carried off all my plants of any variety or species. I seem to recollect that I was once told that, when the disease first appeared at Kew, the beds were dressed with lime. If this is so, it is hardly surprising that no cure was effected, for once the bacillus that does the harm is present, it is an acid reagent, such as superphosphate, and not the neutralising lime, that is required to destroy it. When leaves turn yellow and rhizomes rot, usually at the neck, level with the ground, the diseased portions should be pulled or cut out and superphosphate sprinkled liberally all round and watered in. Within the narrow limits of my garden I am unable to give my plants fresh soil as often as I should like to do, but it has become my practice always to dress the surface fairly liberally with superphosphate whenever Irises are being transplanted, and so far, at any rate, my collection has not suffered to any appreciable extent. *W. R. Dykes, Charterhouse, Godalming.*

THE COLOURS OF FLOWERS.—In the very interesting note on p. 239, Mr. E. H. Jenkins refers to the influence that the soil exercises on the colour of the flowers grown therein. In addition to this the atmosphere also plays a very prominent part, as may be seen by the colour of flowers grown in different conditions. Not only are the tints of many blossoms deepened by exposure to a clear, pure air, but also the leaves of those with bright-coloured foliage. This was brought markedly home to me some years ago, when spending a short holiday on the southern slope of the Sussex Downs. I was surprised at the colour of the leaves of tricolor Pelargoniums, then in the height of their popularity. I flattered myself that I know most of the popular varieties, but so rich was their colouring that I had in some instances to confess myself beaten. All the outdoor flowers were very bright, as also were the leaves of Acalyphas, Crotons, and other fine foliage plants grown under glass. It was this same atmosphere which enabled Messrs. Balchin, when at Hassocks, to grow such splendidly coloured hard-wooded plants, and especially the charming blue Leschenaultea biloba major. The collector of plants in Alpine regions is often disappointed in the colour of the flowers of the plants when grown under cultivation. *W. T.*

PROTECTING STRAWBERRIES.—The plan of cutting straw for the protection of Strawberries against the soiling of the fruits, mentioned by Mr. J. A. Pace on p. 235, is new to me, and evidently an effective and good one. Straw, however, is out of the question at the present time in many gardens. Years ago, when I had to protect 20 rods or more annually, I used nothing except lawn mowings. These were always plentiful just when the flower-trusses were showing or beginning to open, and as soon as the mowing was completed the grass was wheeled to the Strawberry plots. This being early in the season the grass was free from seeds, and the mowings short because done by the machine. The grass was carried down the rows in baskets and laid over the ground to a depth of 2 inches or 3 inches. After a few days' sunshine the grass got compressed or shrunk to half an inch, or less after rain, and the grass blades being interlaced they resembled a piece of coarse cloth, on which the berries lay down

as they became heavy, and remained perfectly clean when ripe. This method of strawing, if I may use the term, kept down weeds and prevented any trouble from slugs, except to a small extent in unusually wet seasons. I have known of a case where peat moss litter, used for the above purpose, and for feeding the plants, harboured snake millipedes (Blanjulus) till they became a veritable pest on account of their numbers. *J. F.*

SOCIETIES.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

MAY 9.—The annual meeting was held on this date, the Rev. J. Crombleholme presiding. The report and balance-sheet were adopted. R. Ashworth, Esq., was re-elected president. The vice-presidents, officials, and committee were re-elected, with the addition of Messrs. Wm. Pickup, E. Rogers and S. Davenport.

The prizes were presented to the successful exhibitors as follows:—

Gold Medal, presented by Mr. J. J. Bolton, to the Rev. J. CROMBLEHOLME (Gardener's Prize to Mr. E. Marshall).

Silver-gilt Medal, presented by Mr. Bolton, to S. GRATRIX, Esq. (Gardener's Prize to Mr. J. Howes).

Botanic Society of Manchester's Gold Medal, to Mr. C. BRANCH.

A. P. Handley's Prizes, to Messrs. E. ROGERS and S. DAVENPORT.

Messrs. Charlesworth's Objet d'Art, to S. GRATRIX, Esq. (Gardener's Prize to Mr. J. Howes).

Messrs. Cypher's Gold Medal, to R. ASHWORTH, Esq. (Gardener's Prize to Mr. S. Davenport).

Dr. Craven Moore's Silver Cup, to R. ASHWORTH, Esq. (Gardener's Prize to Mr. Davenport).

A. P. Hommer's Silver Cup, to R. ASHWORTH, Esq. (Gardener's Prize to Mr. Davenport).

Messrs. McBean's Silver Trophy, to R. ASHWORTH, Esq. (Gardener's Prize to Mr. Davenport).

Mr. P. South's Prizes, to Messrs. S. DAVENPORT, C. BRANCH, and J. LUPTON.

Committee present: Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, D. A. Cowan, J. C. Cowan, J. Cypher, A. G. Ellwood, A. R. Handley, J. Howes, A. Keeling, J. Lupton, D. McLeod, W. Shackleton, and H. Arthur (*secretary*).

AWARDS.

FIRST-CLASS CERTIFICATES.

Odontioglossum crispum Briton, a full, round, white flower, with a deep blotch on the lip, from Mrs. S. GRATRIX.

O. c. xanthotes Conyngham, a well-shaped flower with lemon-yellow markings, from Dr. CRAVEN MOORE.

O. Peeetorei Monica (Lindenii × Charlesworthii), from Col. Sir J. RUTHERFORD, Bart.

AWARDS OF MERIT.

Odontioda Harlequin, a fairly large flower, with large blotches of reddish brown on the segments, from S. GRATRIX, Esq.

Obituary.

JOSEPH TAILBY.—*Horticulture*, U.S.A., announces the death of Mr. Joseph Tailby, florist, at his home in Wellesley, U.S.A. Mr. Tailby was a native of Leicestershire, and settled in America in 1864. After spending two years in Hoboken, N.J., in New York and Framingham, he settled in Wellesley and established a florist's business. He was a successful hybridist, and raised, amongst other things, a fine Cucumber, named Tailby's Hybrid, and Carnation Grace Wilder, this being a variety without a peer in its day and the first really good commercial Carnation of its colour. In the same year Mr. Tailby introduced Fred Johnson, a light red Carnation, and Princess Louise, rose-pink, and both of these had considerable local celebrity. More recently he produced a new race of hybrid yellow Callas.

CROPS AND STOCK ON THE HOME FARM.

MACHINERY.

ALTHOUGH so much extra land has lately come under arable cultivation, the work is well in hand, thanks in great measure to the employment of German prisoners of war. I have nothing but good to say for these men, both for manual and for horse labour. At first they were strange to our methods of procedure, but they quickly adapted themselves to circumstances, and now they make very good ploughmen.

They are also excellent hoers, assiduous in their work, and quick to learn. They planted out most carefully 70,000 onions that were raised in boxes. Some few farmers had at first an objection to their employment, but this feeling quickly gave way to wiser counsels, and now the supply in this district is inadequate to the demand. The Government has certainly equipped them with excellent material, ploughs, harrows, rollers, drills, and harvest appliances.

The continued scarcity of skilled workmen—carters especially—will induce farmers to employ more machinery. Motor vehicles are excellent labour-saving appliances. In suitable sites—flat fields and light soils—no trouble need be experienced in ploughing five acres per day. As cultivators, too, they render excellent work at a small cost. In grass and corn cutting they are very useful, and easy to learn to drive. The heavier types are road haulers, and can be employed to thresh corn. Where the land is stiff and heavy a special type for such a purpose should be selected. Do not expect, however, to plough too many furrows at once. If three furrows are well done it should be sufficient.

RUST ON WHEAT.

Certain fields of Wheat which looked promising a short time ago are now attacked by "rust." *Puccinia graminis*. Some farmers hold that rust is transmitted from one Wheat crop to another. This may be so under certain conditions, but in one crop I have in mind Wheat is following a Sainfoin ley which had been down ten years.

My own experience leads me to believe that excessively cold damp weather in April and especially in May, is the main cause of rust in this cereal.

MAIZE.

This catch crop is exceedingly valuable to the cow-keeper. With a dry spell of weather in August and September the pastures quickly become short of grass, and then green Maize gives a fillip to the milk supply. Again in October, even if not required in the two preceding months, Maize is valuable, as by that time the grass will probably be lacking in quality. Maize given daily not only improves the quantity of milk, but its quality also. No time should be lost in sowing the Giant Horse Tooth or the Virginian variety, at the rate of one bushel per acre. Sow the seed thinly in every plough furrow, scattering along with the seed superphosphate at the rate of 3 cwt. per acre, where no farmyard or other manure was used.

CARROTS.

Complaints are common among gardeners that Carrots are not a full or even crop. My acre of Scarlet Intermediate has a capital plant. Thin the plants to 9 inches apart; too many plots of this crop are spoilt through neglect in thinning early. Keep the soil between the rows well stirred to keep down weeds and hasten the growth.

SUNFLOWERS.

The plants raised under glass and put out a month ago are now 15 inches high. They look strong, and likely to reach 7 feet high. Some method of supporting their stems must be devised to protect them from a strong gale. String, wire, or small stakes stretched horizontally along the rows at intervals would afford the necessary protection.

The sown plants, one foot a few inches high, sturdy, and promising. The recent dry weather is in favour of them getting out of the way of slug attacks, especially if the soil between the rows is frequently stirred.

RAGWORT IN PASTURES.

This obnoxious weed is growing luxuriantly in some pastures where its removal last autumn was neglected. Being a perennial it is useless to cut off the stems. Nothing short of digging up the whole plant is efficient. Ragwort is, in my opinion, one of the worst weeds possible in a pasture where milk cows graze. *E. Molyneux.*

THE HARVEST OUTLOOK.

The reports as to the cropping outlook received by the Food Production Department up to last Week-end from the Departmental Commissioners are uniformly encouraging. Never have the Wheat and other corn crops in England and Wales as a whole looked better than they do at the present time; grass is generally good, and roots are promising.

"The promise of nearly all crops is high," says the Berks, Bucks, Oxon, and Wilts Commissioner, "and it looks as if the harvest of 1918 will be far above the average. The Wheat in particular is in the better land districts of quite exceptional promise." In the Pewsey Vale it is reported that "piece after piece has enough plant on it to produce 10 quarters to the acre if the corn stands up till the day of harvest." A farmer of long experience farming 7,000 acres of land states that he has never grown such Wheat as he has to-day, and that "200 acres out of his total Wheat area of 1,600 are better than he has ever seen on any land before."

The weather may damage these crops before they are harvested; however, much of the land in this area is sown with the variety of Wheat known as Benefactor, which, as experience proves, will stand a great deal of knocking about. "During the last season this variety could be seen still upright when others were hopelessly laid."

Many of the reports from the Home Counties describe the Wheat as "too good."

There has been much talk about damage done by wireworm and leather-jacket to spring corn on newly ploughed grassland. The Commissioner for Berks, Bucks, Oxon, and Wilts declares that he has satisfied himself "that this damage is less than has been generally reported, and that many pieces have recovered from the attack." A general survey of the country by representatives of the Department confirms this view. Where serious damage has been done by pests on newly ploughed grass it appears to have been usually associated with defective consolidation of the soil. In a large proportion of cases examination has shown that the damage was done by slugs, and not by wireworm at all, as had been reported. Most of the land where corn crops had failed has been sown or planted with other crops, which now apparently are doing well. There is certainly no cause for pessimism with regard to "ravages of wireworm and leather-jacket." A certain amount of damage was anticipated by the experts of the Department; and, so far, the actual harm reported has been no greater than was expected.

The Commissioner for Somerset, Devon, and Cornwall says: "The country is looking exceedingly well, and from very experienced agriculturists I am informed that the damage by wireworm is not so great as normally. The crops promise to be excellent. Potatos were lifted in the parish of St. Paull, near Penzance, on May 21."

The Wheat crops in the Fens are exceptionally good, says the Lincs, Rutland, and Notts report. The Pea crops appear to be satisfactory everywhere. There will be little difficulty this year in securing plants of Mangolds, which last year gave much trouble. Grass is abundant, and live stock are improving in condition.

From Salop and Staffs it is reported that corn and grass have "never been seen to grow with such extraordinary rapidity as this season."

The Commissioner for Hants, Dorset, and the Isle of Wight states that corn crops generally continue to look well.

In Lancashire and Cheshire the hay harvest promises to be up to the average in bulk, whilst many corn crops, which formerly looked sickly are now showing considerable vigour.

From Worcestershire it is reported that the Victoria Plums were cut by the frost. Egg Plums are affected by blight and will be only a partial crop, and caterpillars are damaging the Apples. But it is satisfactory to know that the fears entertained in mid Wales and some other districts that unfavourable weather early in the season would have damaged the fruit crop seriously do not seem to have been realised.

MARKETS.

COVENT GARDEN, June 12.

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

(All 48's, per doz. except where otherwise stated).

	s. d.	s. d.		s. d.	s. d.
Aralias	7 0-	8 0	Marguerites, white	9 0-	10 0
Araucaria excelsa	7 0-	8 0	Mignonette ..	12 0-	15 0
Asparagus plumosus	10 0-	12 0	Pelargoniums — zonal, various	15 0-	18 0
— Sprengeri ...	9 0-	10 0	— 60's, various	6 0-	8 0
Aspidistra, green ...	30 0-	42 0	— ivyleaf, various	3 0-	4 0
Crassulas, various	18 0-	21 0	Roses, polyanthus	12 0-	15 0
Erica gracilifolia ..	24 0-	30 0	— rambler (each)	24 0-	30 0
— persoluta ..	36 0-	42 0	Verbena Miss Willmott	5 0-	12 0
Fuchsias, arbus...	12 0-	15 0	— — 60's ...	8 0-	10 0
Heliotropes ...	12 0-	15 0		4 0-	6 0

Ferns and Palms: Average Wholesale Prices.

	s. d.	s. d.		s. d.	s. d.
Adiantum cuneatum, 48's, per doz.	9 0-	10 0	Nephrolepis, in variety, 48's ...	12 0-	18 0
— elegans ..	9 0-	10 0	— 32's ..	24 0-	36 0
Asplenium, 48's, per doz.	9 0-	12 0	Pteris, in variety, 48's	8 0-	12 0
— 32's	21 0-	24 0	— large 60's ...	4 0-	5 0
— nidus, 48's ...	10 0-	12 0	— small 60's ...	3 0-	3 6
Cyrtomium, 48's ...	8 0-	10 0	— 72's, per tray of 15's	2 0-	2 6

Cut Flowers, &c.: Average Wholesale Prices.

	s. d.	s. d.		s. d.	s. d.
Arums—			Lilium longiflorum, long	15 0	—
— (Richardias), per doz. bl'ms.	9 0-	12 0	Nigella, per doz. bunches ...	4 0-	8 0
Carnations, per doz.			Orchids, per doz:—		
— blooms, best American var.	2 0-	3 6	— Cattleyas ...	10 0-	12 0
Coreopsis, per doz. bunches ...	4 0-	5 0	Paeonies 6's, various, 6-9 bunches ...	8 0-	12 0
Cornflower, blue, per doz. bunches	1 3-	2 0	Pelargoniums, double scarlet, per doz. bunches ...	12 0-	18 0
— pink, per doz. bunches ...	2 6-	3 0	— white, per doz. bunches ...	5 0-	6 0
Croton leaves, per bun.	1 3-	1 6	Pinks, white ...	2 0-	4 0
Gardenias, per box (12's)	4 0-	5 0	Pyrethrum, double, coloured, per doz. bunches ..	3 0-	6 0
— (18's)	2 0-	3 0	— white, per doz. bunches ..	3 0-	6 0
Gladiolus — Peach Blossom, per doz. bunches ...	21 0-	24 0	— single, per doz. bunches ...	3 0-	5 0
— white, per doz. bunches ...	15 0-	18 0	Roses, per doz blooms—		
Gypsophila, pink, per doz bunches	6 0	—	— Frau Karl Druschki ..	2 0-	3 0
— white, per doz. bunches ...	9 0-	12 0	— Ladylove ...	3 0-	4 0
Heather, white, per doz. bun. ..	9 0-	12 0	— Liberty ...	3 0-	4 0
Iceland Poppies, per doz. bunches	4 0-	8 0	— Madame Abel Chatenay ...	2 0-	3 0
Iris, Spanish, per doz. bunches—			— Niphetos ...	1 6-	2 6
— white	18 0	24 0	— Richmond ...	2 6-	3 0
— blue	18 0-	24 0	— Sunburst ...	2 6-	3 0
— yellow	15 0-	24 0	Stephanotis, per 72 pips ...	3 0-	3 6
— mauve	15 0-	24 0	Stock, English, per doz. bunches ..	10 0-	15 0
Lapagerias, per doz. blooms	3 0-	3 6	Sweet Peas, various, per doz. bun ..	4 0-	8 0
			Viola cornuta, per doz. bun. ...	2 6-	3 0

Cut Foliage, &c.: Average Wholesale Prices.

	s. d.	s. d.		s. d.	s. d.
Adiantum (Maidenhair Fern) best, per doz. bun...	6 0-	8 0	Berberis, per doz. bun.	6 0-	8 0
Asparagus plumosus, long trails, per half-dozen	2 6-	3 0	Carnation foliage, doz bunches ..	4 0-	5 0
— — medium, doz. bunches	18 0-	21 0	Cycas leaves, per doz.	3 0-	6 0
— Sprengeri ..	10 0-	15 0	Ivy leaves, per doz. bunches ...	2 0-	2 6
			Moss, gross bun...	7 0-	8 0
			Smilax, per bun. of 6 trails ...	4 0-	4 6

REMARKS.—Supplies of cut flowers are more regular, and prices in many cases are easier. Pyrethrums are getting towards the finish. White Pinks (Mrs. Sinkins) and White Stock are sufficient for the demand. White and coloured Paeonies are offered in excellent condition. There is also a good selection in Sweet Peas obtainable from 6s. to 24s. per dozen bunches. Spanish Iris is arriving in much better condition, chiefly from home growers. A few boxes of these blooms are being sent from Guernsey, and when cut in bud they open out well. There is little improvement in the quality of Roses; a few outdoor blooms are being offered. Mrs. J. Laing being most in demand. Other flowers on offer are Cornflowers, Coreopsis, Nigella, Poppies, Gypsophila, Canterbury Bells, and Delphiniums.

Fruit: Average Wholesale Prices.

	s. d.	s. d.		s. d.	s. d.
Figs, Worthing, per doz ...	4 0-	5 0	Nectarines, per doz	12 0-	24 0
Grapes:—			Oranges, per case	60 0-	110 0
— Black Hamburgh, per lb....	2 0-	4 0	Peaches, per doz...	6 0-	30 0
— Muscats per lb.	4 0-	7 0	Strawberries—		
Lemons, per case...	60 0-	100 0	— Cornish, per skip	3 0-	5 0
Melons (each) ...	2 6-	9 0	— Kent, per peck	10 0-	14 0
— canteloupe (Continental)	20 0-	30 0	— Southampton, per skip ...	3 6-	6 0
			Walnuts, kiln dried, per cwt. ...	110 0	—

Vegetables: Average Wholesale Prices

	s. d.	s. d.		s. d.	s. d.
Artichokes, globe, per doz. ...	8 0-	10 0	Mushrooms, per lb.	2 0-	3 0
— Jerusalem, per ½ bus. ...	3 6-	4 0	Mustard and Cress, per doz. punnets	1 0-	1 3
Asparagus, per bundle—			Onions, Egyptian, per cwt. ...	70 0-	74 0
— English ...	1 6-	6 6	— spring, per doz. bun.	6 0-	9 0
Beans:—			— Valencia, per ¾ case ...	54 0-	55 0
— broad, English, per lb. ...	6 0-	6 8	Parsley, per bus. ...	4 0	—
— French (Channel Islands), per lb.	1 6-	2 6	Parsnips, per bag...	8 0-	10 0
Beetroot, per cwt.	6 0-	8 0	Peas, English, per bus.	14 0-	15 0
Cabbage, per doz	1 6-	2 0	Radishes, per doz. bunches ...	2 6-	3 6
Carrots, new, per doz. bunches ...	9 0-	18 0	Rhubarb, natural, per doz. ...	8 0-	12 0
— per bag ...	10 0-	11 0	Shallots, per lb.	1 0	—
Cauliflowers per doz	4 0-	14 0	Spinach, per bus....	4 0-	6 0
Cucumbers, per flat (from 2 doz-4 doz)	28 0-	32 0	Swedes, per bag ...	2 6-	4 0
Garlic, per lb. ...	1 0	—	Tomatos, per lb. ...	1 4-	1 8
Greens, per bag	3 0-	5 0	Turnips, new, per doz. bunches...	12 0-	20 0
Herbs, per doz bun.	2 0-	4 0	Vegetable Marrows, per doz. ...	12 0-	14 0
Horseradish, per bun.	3 6-	4 6	Watercress, per doz	0 10-	1 0
Leeks, per doz. bun.	3 0-	4 0			
Lettuce, Cabbage and Cos per doz	0 6-	1 6			
Mint, per doz. bun.	4 0-	6 0			

REMARKS.—Strawberries are now the ruling article in the fruit trade. The market is still well catered for from Southampton with the usual 2lbs. and 4lbs. packages; they are also now beginning to arrive from Kent in pook baskets. Cherries (the first early varieties) are now arriving in half sieves (24lbs.). Grapes (Black Hamburgh and Muscat of Alexandria), Melons, Peaches, Nectarines, and Figs are all plentiful. Tomatos have not been so plentiful as usual at this time of year. Cauliflowers are scarce and expensive. Mushrooms are fairly plentiful. Peas (outdoor) are now well in evidence. A further consignment of Egyptian Onions reached the market this week; the bulbs realised lower prices. Cucumbers continue expensive for the time of year. Some fine samples of Englishgrown Asparagus are still on offer.—*F. H. R., Covent Garden Market, June 12, 1918.*

ANSWERS TO CORRESPONDENTS.

ASPARAGUS: *A. J. G.* We found the mycelium of a fungus present on the specimen you sent, but it was barren, and could not be identified. We presume that the specimen was taken from one of the beds which you say are not succeeding, and we would advise you to pull up and burn all the diseased plants, and spray the rest with Bordeaux mixture after the crop has been cut. Fungous disease is not common in Asparagus, and is usually the result of unfavourable conditions, such as drought, or want of nourishment in the soil.

CARNATIONS: *J. A. B.* The dark spots on the leaves of the Carnations do not resemble the effects of any fungous or insect pest. Perhaps you have sprayed the plants with some insecticide or fungicide at too great a strength.

"FLAT" OR CUCUMBERS: *W. E. B.* The number of Cucumbers continued in a market "flat" varies from 4 dozen to 2 dozen, according to the size of the fruits.

GRAPE FRUIT: *D. B.* The Grape fruit is usually budded on its own seedlings, the bud being taken from a named variety. You must not, however, expect to be able to grow this fruit successfully in the open in this country. The plant is exceedingly susceptible to cold, and will not survive anywhere above what is termed the frost-line. The botanical name is Citrus grandis. The plant is listed as Citrus paradisei in Messrs. T. S. Rivers and Son's catalogue, from whom you should be able to obtain grafts.

HEDGE DYING: *C. N.* As you do not send us a specimen of the Privet, we cannot say if there is any disease which might cause it to die; but the trouble you describe might be due to natural causes. Privet is very susceptible to drought, and this condition is often present in small front gardens, where the soil put in by the builder is frequently quite unsuitable to plant life, and what little moisture is present is absorbed by the brick foundation of the railings. We should advise the tenant to grub up all the bushes which appear to be past cure, and buy new plants (which are very cheap), enriching the soil as much as possible with well-rotted manure and leaf-soil before putting them in.

NAMES OF PLANTS: *Dolomite.* Crepis hieracioides, one of the species of Hawk's-beard. It usually grows in mountain woods.—*Bradford.* Geranium pratense. It is often cultivated as a garden plant.—*T. G. S.* 1, Solanum species; 2, Thunbergia alata.—*Miss P., Cork.* Crambe maritima.

ONIONS FOR KEEPING: *J. L. W.* Onions should be stored for winter use in a dry, frost-proof shed or other structure. Cold is not so injurious to them as damp, which will quickly spoil them, and favour attacks of mildew. As regards varieties, some keep much longer than others, and when sowing seed this point should be borne in mind. For instance, Ailsa Craig and Giant Rocca, which are excellent varieties for immediate use, will not keep; for this purpose you should choose some variety such as James' Long Keeping or Autumn Triumph. Specimens of the latter variety have been known to keep well for two years. Spanish Onions keep well, not because they are "treated" with anything, but because, by reason of climatic and other conditions, they develop the hard, brown skin which enables the bulbs to be safely stored without fear of their sprouting. The warm, dry climate of most parts of Spain is ideal for the development of this quality.

PEAR SHOOTS DISEASED: *Argyllshire.* There is no fungous or other disease on the portion of the shoot sent; perhaps the trouble arises lower down the shoot.

PLUM TREES DYING; *T. E. W.* Your gardener is not alone in knowing very little about the cause and cure of Silver Leaf disease, as it is a most obscure complaint, and the discovery of a remedy has hitherto defied all efforts at research. The only thing to do is to examine the Greengage tree carefully, and cut away and immediately burn all diseased branches and twigs well behind the discoloration. Do the same with all other Plum or Apple trees growing in the vicinity. If this is not successful, grub up the whole tree and burn it, and also dig up the soil in which it was growing and replace it by fresh compost, before planting other specimens.

ROSES; *M. H. G.* What you call "cankers" are not those of Coniothyrium; in fact, there is no fungus disease on the plants. Canker is sometimes purely physiological, e.g., the result of frost, or of the use of unsuitable stock for grafting. You state that some of the trees are affected by "spot"; if there are blackish blotches with reddish-purple borders on the upper surface of the leaves, it may be Septoria rosarum; but there is another similar spot, which is practically harmless. In any case, spray the trees with a dilute solution of copper sulphate, keep them well pruned, and expose them fully to the sunlight and air.

SOIL: *L. C.* If the drain pipes in your land are 18 inches deep, that is quite suitable; but they are evidently not sufficiently near to each other. We should advise you to supplement them by straight trenches, one between each pair of pipes, a foot to 18 inches deep and a foot wide, filled with coarse clinkers. These will do much to assist the drainage of the land, though not quite so efficiently as pipes, which are not so easily choked with silt and soil. Needless to say, the drainage should run from the highest to the lowest level of the ground. When you are digging the soil, make a point of incorporating with it anything which will tend to lighten and separate it, such as sand, gravel, old mortar rubble, decayed leaves and leaf-soil, and well-rotted manure.

TULIPS DISEASED: *M. H. G.* The Tulips are attacked by a fungus disease, Botrytis parasitica. Pull up and burn any infected plants, and, if possible, sterilise by burning all the soil in which they were growing. We should advise you also to remove the healthy bulbs to another part of the garden; the disease will not attack Roses. Be careful, however, not to retain any plants which show the least symptoms of disease, such as have brown velvety patches on the stem or leaves.

Communications Received.—O. F. & H. Society—J. C.—L. S.—E. N.—E. P. H. & Co.—G. H. H. W.—L. A. T., Rothamsted—Miss C. W.—B. G. A.—E. M. H.—E. B.—A. C. B.—O. P.—M. H. M.—Vines.

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CONTENTS.

ILLUSTRATIONS.

LONDON TREES.

LONDON might well be called "The City of Plane Trees," for unfortunate though it may be from the point of view of sameness, it has been computed that fully 60 per cent. of the arboreal vegetation in the metropolis consists of this tree. The Elm, Lime, Poplar, Acacia and Ailanthus are all more or less common, but the so-called London Plane has ousted nearly every other tree from the field; indeed, during the past five-and-twenty years it has been planted to the exclusion of almost every other species. That it succeeds as well, if not better, in the London area than the majority of trees must be admitted, but the almost monotonous repetition in our streets, squares and public gardens of this particular Plane is to be deplored, and has been the cause of much unfavourable comment during recent years. So far as I am aware there is not a public or private garden, square, park or open space in London where the Plane has not been planted, often to excess, while the majority of streets, wide or narrow, sheltered or exposed, have been planted with the same tree. The Ailanthus succeeds quite as well as, and perhaps better than, the Plane in the most confined and smoky districts, while the Acacia, common and weeping Ash, Laburnum, Mulberry, Catalpa, and many beautiful species and varieties of Pyrus and Thorns, are all not only highly ornamental, but well suited for planting both in urban and suburban districts. For small areas, such as most of the London squares, the Plane, being of large growth and one of our noblest forest trees, seems rather out of place, and, owing to its tall, usually branchless stem, imparts a bare, unfurnished appearance to these gardens, especially when used alone or with few other smaller-growing trees and shrubs as underwood. In comparing Berkeley and Hanover Squares, where little else but Planes has been planted, with, say, Bedford, Russell, or Gordon Squares, with their neatly kept turf and well-grown specimens of the weeping Ash, Thorns of various kinds, the beautiful cut-leaved Pyrus, Ailanthus, Laburnum and Holly, which impart a cheery, furnished aspect, the difference is very pronounced, and especially during the winter. In St. James's Square only a few trees of Ailanthus, Thorns, and two solitary Elms relieve the monotony produced by the Planes, which in this instance are rather poor and weedy. Leicester Square follows suit with excessive Plane tree planting, while the nineteen trees in Trafalgar Square are other examples of the too free use of a single species. In Hanover Square two half-dead Thorns and a small Chestnut struggle for existence with giant Plane trees.

Most of the new streets and roads have of late years been planted with the Plane, and a nurseryman in the suburbs informs me that fully 75 per cent. of his London orders have been for this tree. To the casual observer the variety of trees to be found in London may appear small, but such is by no means the case; indeed, the number of distinct species is a comparatively large one. It is only after a careful examination of the trees in our streets, squares and open spaces by an interested person that the number of different kinds can be realised, for unless the examination is made by one acquainted with the peculiarities in form and foliage of various trees, many of the less common kinds are apt to be overlooked. Few Londoners, perhaps, know that in the central parks alone upwards of two hundred and twenty distinct trees are cultivated, that a number of healthy Catalpas are growing by the Clock Tower at Westminster, the Judas tree, Liquidambar and Black Walnut at Fulham, Paulownia and golden Catalpa in Regent's Park, or the Mulberry in Finsbury Square. In the smoke and dust of Chelsea many of the less common trees flourish amazingly, including the Paper Birch, Catalpa Kaempferi, Ginkgo biloba (Maidenhair tree), Prunus Padus (Bird Cherry), and Koelreuteria, while the magnificent Hickories and Arbutus (Strawberry tree) in Waterlow Park, Liriodendron tulipifera (Tulip tree) at Golders Green, and the Maidenhair tree by the Commercial Road and other parts of the East End are surely sufficient evidence of how well other trees as well as the Plane succeed in different parts of London. Of the commoner trees, such as the Ash, Elm and Acacia, there are magnificent specimens both in Hyde Park and Kensington Gardens, while the gigantic Poplars and Willows by the lake side in St. James's Park have few equals even in the open country. The Ailanthus grows freely in all the parks, as does the Manna or Flowering Ash, while the various forms of Acer or Maple, Prunus and Pyrus, all show by the age and size to which they have attained how well suited they are for thriving in the impurities of a town atmosphere.

The Ailanthus grows in London quite as well as the Plane; indeed, in certain confined East End districts, as by the church of St. Magnus the Martyr, near Billingsgate, it has ousted the Plane, though both are growing in exactly similar conditions and within a few yards of each other. The power in certain trees to withstand the chemical and other impurities of a town atmosphere is owing largely to a hardy and robust constitution, but the quality of the soil in which they are growing has its effect; and it is a curious fact that the Plane is not the best tree for planting in Sheffield or Manchester, where soil and other conditions are different from those in London. It is generally supposed that the annual shedding of the bark is the reason of the Plane tree succeeding so well in London. This is, however, scarcely borne out by facts, as several other trees which do not shed their bark thrive equally well, amongst them the Ailanthus, Poplars of several kinds, the Acacia, Mulberry, many varieties of Pyrus, Prunus and Crataegus.

The bark of the Acacia remains intact for many years, and, being so rough and furrowed as to make the trunk deeply fluted, collects dust and other atmospheric impurities in large quantities, so much so that seedlings of other trees frequently spring from amongst the debris in nooks and crannies of the stem.

That the Plane is, whether in point of ornamental value and shade, or from its ability to thrive well in smoky localities, a valuable tree for planting in London, cannot be denied; but the limit of numbers has long ago been reached, and unless a speedy check is put on its indiscriminate use the future of the metropolis from a purely arboreal point of view will be monotonous in the extreme. *A. D. Webster.*

THE MARKET FRUIT GARDEN.

FUNGOUS DISEASES.

I HAVE always considered a dry May to be unfavourable to the spread of fungous diseases. There is, however, a serious attack of brown rot on Czar and President Plums, not only in my plantations, but on other trees in the district. Many spurs and branches are quite brown and dry, giving the trees a half-dead appearance. They should not be given up as hopeless, however, as similar trouble with Pond's Seedling in a previous year has been overcome. The brown leaves and spurs and dead shoots should be cut out at once and burned, to prevent the spread of the disease. Similar treatment is necessary with varieties of Apples that are attacked by canker on the young wood. I have a very bad example of this in some young trees of James Grieve. Up to the present the trees have made splendid growth, but now they are beginning to canker badly. In some cases it has been necessary to cut out about a third of the tree. Apparently this variety is going to repeat the behaviour of Cox's Orange Pippin here, trees of the latter starting well, then cankering seriously for several years, but eventually recovering after persistent treatment with the knife. Whether the labour is worth while in the case of James Grieve is doubtful. This variety does not yet find much favour in southern markets, though it appears to be very popular in the north.

Apple bloom wilt, a somewhat new disease which has done much damage in the past few years, has made its annual appearance on Domino and Early Julyan. It is, however, less plentiful than usual, because there are fewer trusses for it to attack. Lord Derby, the worst variety for this disease, has no fruit, so that it is not troubled by blossom wilt this year. Affected trusses should be cut out promptly to

prevent the spread of the canker which follows the wilting of the blossom.

LUCERNE AS A COVER CROP

A plantation of Apple trees sown with Lucerne last year was mown for the first time for the season at the end of May. There was a fairly good crop, though largely intermixed with Red Clover and grasses. The growth is to be left on the ground as green manure, the object being to test a plan of manuring the trees which is common in the United States, a further advantage being the saving of labour in digging and hoeing cultivated plantations. So far the trees look none the worse for the presence of the cover crop. One thing is noticeable, though it may be due to mere chance: winter moth and allied caterpillars have been less serious in this plantation than in those that are cultivated. It is possible that the more solid ground makes it difficult for the fully-fed larvae to penetrate for pupating purposes, or for the moth to emerge from the pupae. *Market Grower*

TREES AND SHRUBS.

ESCALLONIA LANGLEYENSIS.

THIS hybrid Escallonia is remarkably handsome when laden with its clusters of rose-carmine flowers. It is as a rule at its best in the month of June. The flowers are soon over, but this applies equally to many other flowering shrubs. Escallonia langleyensis was raised at Messrs. James Veitch and Sons' nursery at Langley, by John Seden, who, after a very successful career as a raiser of hybrid Orchids and other indoor plants, went to Langley and devoted his attention to hardy plants of all kinds, both flowers and fruits. In *Hortus Veitchii* the parentage of E. langleyensis is given as E. Philippiana fertilised with the pollen of a dark variety of E. macrantha known as sanguinea, but Mr. Bean, in *Trees and Shrubs Hardy in the British Isles*, states that the parents are Philippiana and punctata. The hybrid was given an Award of Merit by the Royal Horticultural Society in 1897, but it must be regarded as well worth the higher honour of a First-class Certificate. Being of somewhat lax growth, this Escallonia is eminently fitted for clothing an unsightly fence or similar positions. If the main branches are fastened in their place, and the secondary ones allowed to grow at will, the tree forms, from the arching, semi-pendulous character of the shoots, an exceedingly graceful specimen. In the nursery at Coombe Wood there was a large plant of this Escallonia (I believe the original one), trained as a flat screen, the branches being supported by stout stakes. It was in this way very effective. By some this Escallonia is referred to as an evergreen, but in my suburban garden in the south-west of London, on a cold, clayey soil, it loses nearly all of its leaves in the winter. It is advantageously employed in hiding the ugly tarred fence so conspicuous in suburban districts. Cuttings are particularly easy to root if taken towards the end of the summer, inserted in a close frame, and shaded from direct sunshine. *W. T.*

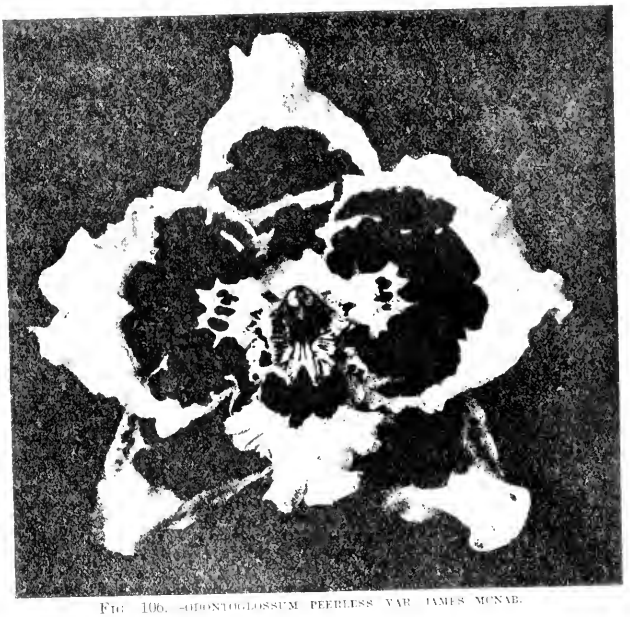


FIG. 106.—ODONTOGLOSSUM PEERLESS VAR. JAMES MCNAB.

ORCHID NOTES AND GLEANINGS.

ODONTOGLOSSUM PEERLESS VAR. JAMES McNAB.

THE beautiful forms of Odontoglossum Peerless raised by Messrs. Armstrong and Brown, by crossing O. Ossulstonii (crispo Harryanum × Pescatorei) and O. eximium (ardentissimum × crispum), two of which have, as seedling plants, secured the Preliminary Commendation Award of the Royal Horticultural Society, give excellent examples of good results obtained by crossing with a definite purpose. The lineage in the variety James McNab (see fig. 106) includes O. crispum thrice, O. Pescatorei twice, and O. Harryanum once, blotched forms of O. crispum being used to secure good colour and large size, and O. Harryanum to impart firm substance. O. Pescatorei gives the fine form, and especially the broad development of the lip, which is clearly indicated in the variety James McNab.

The flower is 4 inches across and the petals are 2 inches in width. The ground is white, the inner parts bearing large, confluent, ruby-red blotches; the petals have a small white base with red spotting, and both sepals and petals have a broad white margin. The lip is white, with a ruby red blotch in front of the crest.

A MESOPOTAMIAN CALENDAR.

January.—Most trees in Mesopotamia are evergreen, but the Willow, Fig, Mulberry, Vine, and a species of Mimosa—the only winter-flowering shrub, are now leafless. The Euphrates Poplar, though its leaves are bright yellow, forming brilliant spots of colour in the sunshine, has not yet shed them. In the Palm groves Wheat and Lucerne are coming up, and the desert is being ploughed in the neighbourhood of each village. Irrigation ditches are also being dug from the river. There is a semi-aquatic Ranunculus in flower, and Capsella Bursa-pastoris, but I have seen nothing else. The nights are still cold, with frosts sometimes in the early mornings; the days bright and sunny, warm when there is no wind. A few days' rain may be expected.

February.—Spring begins. In the shelter of the Palm groves, along the irrigation creeks, familiar flowers, such as Ranunculus aquatilis, Polygonum sp., and one or two grasses, come into bloom. There are no more night frosts, and though there are rainy days, and in some districts, at least, clammy mists in early morning, the weather is on the whole genial. Towards the end of the month the racemes of the Date Palm begin to appear beyond the tip of the spathe.

March.—The month of flowers. The Mulberry and Willow are in flower early, also the Euphrates Poplar. Along the creek side are English wild flowers, such as Geranium sp. (crimson), Vicia sp. (purple), Euphorbia, Clover, Anagallis (two species, one with scarlet flowers, possibly A. arvensis, the other with bright gentian-blue flowers), Hieracium, and Veronica; also several aquatic plants. By the middle of the month the gravel desert above flood level is covered with flowers, mostly dwarf, including many "rosette" plants. They include a white-flowered Salvia, dwarf Iris, Euphorbia, Geranium (two species), Vicia, (two species), Asphodel (two species), Compositae, an Umbellifer, Potentilla sp., and many more. There are heavy dews in the early morning, which are perhaps the source from which these plants obtain their water. The silt desert, which is saline, owing to periodic flooding, supports only Samphire and patches of "Camel Thorn"—a Leguminous undershrub with the appearance of Gorse.

By the end of the month the Lime and Orange trees are in flower, and the Fig trees and Vines in full foliage. The Liquorice is coming into leaf, and the Wheat is almost ripe.

April.—The days begin to get very hot, but the nights are pleasantly cool; it is the end of spring. There are dews in the early morning, but rain is quite exceptional. The Pomegranates and Oleanders are in flower, and a beautiful Caesalpinia tree. All trees are in full leaf. There are still many flowers in bloom by the creeks, but they are already past their prime, and some are seeding, while on the desert many of the plants in flower last month are already shrivelled. The Tamarisks come into bloom, and also Liquorice. In the creeks Frog-bit, Mares'-tails, and other familiar English aquatics are in flower. The Arabs are busy pollinating the female flowers of the Date Palm, carrying about the huge, jaundiced, male racemes.

May.—The Mulberries ripen, and the pretty crimson-flowered "Camel Thorn" comes into flower (it is a small Gorse-like under-shrub belonging to the Leguminoseae, which grows on the desert, on old walls, and in the Palm groves). At the beginning of the month a magnificent shade-giving Leguminous tree is in flower, but it lasts scarcely a fortnight, and by the end of the month all the flowers are gone. In June it flowers again for a short time, and I saw it in bloom once more in September. The leaflets of the large, compound leaves close together, and hang limply from the depressed leaf-stalk. By day, even in the hottest weather, they are wide-

spread, their polished surfaces reflecting the light. There is another fine tree which flowers this month, and behaves in a similar way, the last spasm of flowering being October. It belongs to the Celastraceae. Thus there are two flowering seasons, spring and autumn, separated by hot and cold seasons. By the end of May the

FIG. 107.—KORAH CREEK, NEAR BASRAH, MESOPOTAMIA, FORMERLY FULL OF DATE PALMS AND VINES AND SOME BANANAS.

shade temperature had reached a maximum of 110° F.

June.—There are heavy dews soon after sunset. Dust storms are frequent, the earth's cold tempering the great heat. The Wheat and Rice crops are reaped at the beginning of the month. Oleanders cease flowering in the autumn, but there are still a few flowers by the creek. Verbena officinalis, Plantago sp., Compositae, Convolvulus sp., an Umbelliferae, and others. Lotus and Satsuma are seen floating in the ditches. In many of the Palm groves is a thick undergrowth of Liquorice, "Camel Thorn," a white-flowered Myrtle smelling of cloves, and a Leguminous undershrub, with purple flowers, moss overt, and highly varnished leaves.

July.—The terrific heat, reaching 130° F. in the shade, shrivels up all the desert plants. By the river two species of Erygonum and a sweet-scented Clover are still in flower; also the Myrtle just referred to. On old walls a Leguminous undershrub with fleshy leaves is in flower and fruit simultaneously, and remains in flower all through the hot weather. There are daily dust storms, and notwithstanding the heat of the day the nights are comparatively cool. No trees are in flower, but all retain their leaves throughout the hot weather, in spite of there being no rain, thus differing from most of those in the monsoon region. The Grapes are ripe, also Water Melons. Winter crops of vegetables are planted on the majority on banks exposed by the falling river, and irrigated.

August.—The intense heat shows signs of decreasing. Towards the end of the month heavy white mists lie over the river and desert in the early morning. The Pomegranates ripen at the beginning of the month, the Dates at the end, by which time the Arabs are busy picking and sorting them. An occasional prostrate Convolvulus is seen in flower out on the dry silt desert, and in pits protected from the scorching wind are a few "rosette" plants with deep tap-roots. Polygonum sp., Potentilla (two species), Malva sp. (not in flower), and a few others. The Myrtle is still in flower, with ripe fruits.

September.—The sixth month without rain. By the middle of the month the early mornings are very pleasant, as are the evenings. It is still very hot in the middle of the day, and the north wind has ceased, but the drawing in of the days makes a big difference to the nights. It is the autumn flowering season, and in the [illegible] flowers in bloom, including Verbena officinalis sp. Orobanche sp. several Compositae, Convolvulus, two species Oxalis sp. Mint, and two or three grasses. In marshy and meadow ground exposed by the subsiding water are patches of Cuscuta on Liquorice and other plants, trailing Convolvulus, and a beautiful little trailing Toad-flax; in some places a species of Cerastium, growing socially, so as to form a thick carpet 6 inches thick, was seen; in other places, a yellow-flowered plant belonging to the Saxifragaceae grew in the grass; also patches of Butomus umbellatus. In the gardens the crops of "Ladies' Fingers," Cotton, etc., are 4 to 6 feet high. Beans, Tomatos, Cucumbers, Marrows and other vegetables are ripe.

October.—Very similar to last month, but cooler. Plenty of flowers, both wild in the desert and in gardens. Roses, Sunflowers, Hollyhock, Jasmine. The Oleanders are in flower again, and so for a short time is the big tree—N.O. Celastraceae—referred to previously. The long grass and flowers of the desert meadows are cut by Arabs, and the ground, formerly green, again takes on the aspect of bare desert. Towards the end of the month it becomes too cold to dine outside at night.

November.—The end of the autumn flowering period; many of the plants enumerated above are still in flower. By the middle of the month the Mulberry trees are shedding their leaves, as also are the Willows, while the Poplar leaves are turning. The Sweet Limes are ripe, though still green. The last of the Cotton and vegetables are gathered, including Indian Corn, and everything rooted out of the gardens for fuel, so that they look as bare as the desert again; a month later they are ploughed and Wheat sown.

December.—After an eight months' drought, rain may be expected any time. The weather turns very cold, with bitter north winds and frost at night, except when rain falls. Oranges and Sweet Limes finally ripen in the winter sunshine, and deciduous leafed trees become bare. There are dense mists, sometimes lasting through the night. The Palm groves, washed of their dust by the rain, look fresh and beautiful for the next two months. As soon as the rain comes seedlings may be seen springing up everywhere in the desert by thousands. The yellow-flowered Mimosa is in bloom, but very little else; a few ephemeral flowers, however, such as Shepherd's Purse, may be found, as in England in winter. *F. Kingdon Ward.*

SOME GARDEN PESTS.

INSECT pests are extremely abundant this year. In this part of Yorkshire the leather-jacket, the larva of the crane fly, or Daddy Longlegs, has been and still is a scourge. It

FIG. 108.—POPLARS, WILLOWS, PALMS AND MULBERRY TREES IN MESOPOTAMIA.

has attacked Cabbages, Peas and Beans. The plants may be severed by the insects from their roots, upon, or immediately beneath, the surface of the soil. I was recently called upon to inspect a row of Peas that had been completely ruined by leather-jackets. The adult insect lays her eggs in the autumn, and the larvae appear

about a fortnight later. They commence to feed in the first warm days of the year. There are various preventive and remedial measures. Undrained grass-land or badly kept water-courses in the proximity of gardens are favourite egg laying stations. Wherever possible drainage of the former and cleansing of the latter should be done. Observers of crane flies will have seen them hovering upon patches of grass that often grow in waste corners of gardens. The grubs will give trouble later, which may be obviated by removal of the grass. An application of nitrate of soda or sulphate of ammonia will often so stimulate an affected crop that it can more than repair the damage. Soil fumigants and various proprietary articles are sometimes recommended, but from my experience they are without the slightest effect. I have many times given them a fair trial. As many adult insects and larvae as possible should be killed.

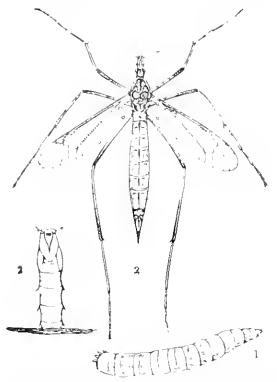


FIG. 109.—THE CRANEFLY, OR "DADDY LONGLEGS" (TIPULA OLERACEA). 1, THE GRUB; 2, THE PUPA; 3, THE PERFECT INSECT.

The eggs of the Onion fly are laid upon the neck of the bulb in late April and May. The grubs hatch quickly, eat the tissues of the bulb, and pupate. In about three weeks flies appear and the process is repeated. A third generation sometimes appears in the South of England, but I have not observed such in the North. Pupae that are produced in autumn pass the winter in the ground, therefore Onions should not be grown on infected land for some years. It is well to dress the Onion crop with soot about the time the flies appear. The pungent odour may drive them away, and at the same time the soot assists the plants. Onions raised under glass are seldom affected. They are stronger and thus better able to withstand attack.

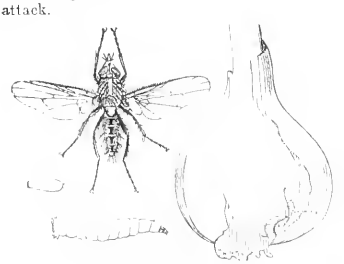


FIG. 110.—THE ONION FLY—ANTHOMYIA CEPARUM (MAGGOT AND PUPA, MAGNIFIED).

Aphides and red spider infest many crops. They pierce the tissues and extract the cell-sap. Multiplication in their case is extremely rapid, therefore prompt measures should be taken to meet an attack in its initial stage: 1 lb. of soft soap and 1 lb. of Quassia extract mixed with 20 gallons of water is an excellent specific.

The time is at hand when we may expect an outbreak of the Potato disease (Phytophthora infestans). Wise cultivators will protect their crops by spraying with Bordeaux mixture or Burgundy mixture. Bordeaux mixture is made by mixing 1 lb. of copper sulphate, 1 lb. of fresh lime, with 10 gallons of water. The first spraying should take place about the third week in June and be thrice repeated at fortnightly intervals. In making Bordeaux mixture no metal vessels should be used. The copper sulphate and lime should each be dissolved in half-a-gallon of water. Mix them together and add the 9 gallons of water slowly. *Geo. H. Copley, Horton Park Gardens, Bradford, Yorkshire.*

The Week's Work.

THE KITCHEN GARDEN.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey

POTATOS.—On the whole, the Potato crops look very promising; the plants came up well, grew strongly, were uninjured by frosts, and are fully a fortnight earlier than usual. Potatos rarely show signs of late blight disease until about the first week in July. The best preventive to blight disease is spraying with a preparation containing copper sulphate, and spraying not only prevents disease but increases the weight and quality of the crop. Bordeaux mixture is largely used, and may be obtained from local chemists, with full directions for use. The foliage should be sprayed on the under as well as the upper surface. Many do not consider it necessary to spray early varieties, which are lifted before the disease is likely to do much harm. Late varieties should be sprayed twice, on the first occasion at the end of June, and the second time in the middle of July.

ASPARAGUS.—Early Peas will be ready for gathering after this date, and there will be no need to cut much Asparagus when Peas are plentiful. It is harmful to cut the shoots from new Asparagus beds until at least two seasons have passed, nor should the shoots in comparatively young beds be cut late in the season. Old beds may be allowed to furnish late supplies if early Peas are scarce, but the shoots should be only carefully thinned and the remainder allowed to develop. If the growth is thinned judiciously fewer but finer buds will form, and give superior produce the next season. Seeing that the loss of the best shoots after this date must greatly weaken the plants, it behoves the cultivator to preserve them as much as possible. The same remarks apply to young beds. Strong, feathered Pea sticks should be put to the plants to prevent damage by strong winds, and the beds kept clear of weeds by hand-weeding.

FRAME CUCUMBERS.—Cucumber plants in frames in full bearing will require attention at least three times a week. Pinch each lateral at the first or second joint beyond the fruit and keep the bed evenly covered with foliage. The roots should be given soft water at a temperature of 80°, and this may be varied by the use of soot-water once or twice a week. When root-feeding is necessary the surface of the bed should be flooded without wetting the foliage, in bright, sunny weather. Fresh linings of dung should be applied from time to time throughout the season, first at the front of the frame and then at the back.

CARROTS.—Those who require a constant supply of young, tender Carrots should make another sowing at once. Select one of the stump-rooted varieties, and sow the seed in rather light soil in drills made 9 inches apart. If the plants are lightly thinned and kept clear of weeds a good supply of roots should be forthcoming early in the autumn. If very small roots are desired sowings should be made in July and early in August in a frame.

FRUITS UNDER GLASS.

By W. J. GUISE, Gardener to Mrs DEMPSTER, Keele Hall, Newcastle, Staffordshire.

THE ORCHARD HOUSE.—The fruit in these houses will now have reached the final thinning stage. Be careful to limit the crop according to the age and condition of each tree. Pot trees are usually so restricted for root space that the welfare of the trees is entirely dependent on stimulants. If there is not sufficient space for top dressings, place pieces of zinc or tin around the inside of the pots, and then fill up with rich compost, preferably a mixture of decayed manure and loam. Diluted liquid manure should be given frequently, and the syringe freely used to keep the foliage clean. Established trees in borders carrying heavy crops require similar treatment, except young trees which are already making too vigorous growth. Trees that fruit on spurs, such as Apricots, Plums, and Cherries, should have the young shoots pinched back to a few leaves, but those at the end of the branches should be left to grow for the present. However carefully Peach and Nectarine trees have been disbudded there are always a few superfluous shoots. Cut these out, retaining those most favourably situated for next year's fruiting.

POT VINES.—Suitable top-dressings and liberal supplies of diluted liquid manure will greatly improve pot vines intended for next year's forcing. The roots must not be allowed to get into the plunging material. If the plants have been stopped at the proper height the canes quickly thicken. As the young rods change colour more fresh air and warmth will be beneficial. Keep the laterals closely pinched from the base to the pruning-point, but on no account should those above be defoliated; they must be left for the present for the plants to draw nourishment from, so as to complete their growth. Syringe these young vines freely to keep the foliage clean and free from red spider.

MELONS IN FRAMES.—Pits and frames that have been cleared of bedding plants may now be planted with Melons. The sun will provide most of the heat necessary. Make up a bed of sweet manure and leaves in equal proportions, and on this arrange a ridge of retentive loam, with which a little mortar rubble and wood ash has been incorporated. Ram the soil firmly, and directly the bed is warmed through the plants may be inserted. Admit a little air in the mornings on bright days, gradually increasing the amount as the sun gains power. Syringe the plants freely at about four o'clock in the afternoon, and then close the frames.

THE ORCHID HOUSES.

By J. COLLIER, Gardener to Sir JEREMIAH COLMAN, Bart., Gatton Park, Reigate.

ZYGOCOLAX AND BOLLEA.—Zygocolax Pescatorei and Colax jugosus may be grown in the same house as Zygopetalums, and should be shaded from strong sunlight. Plants of the allied genera Bollea and Warscewiczella should receive attention in re-potting or top-dressing just after they commence to make new growth. These plants should not be subjected to root disturbance unless it is quite necessary. They may be grown either in pots or pans, which should be provided with ample materials for drainage. As a rooting medium employ a mixture of three parts A 1 fibre and one part clean, picked Sphagnum-moss. Cut both materials into rather short portions, adding a good sprinkling of crushed crocks and a few small lumps of charcoal. The plants grow best in a moist, shady position in the intermediate house. Re-potted plants should be watered sparingly, but the spaces between the pots and their surroundings should be kept in a moist condition always. When established the plants should never be allowed to become quite dry at the roots.

VANDA.—As plants of Vanda trees pass out of flower they should receive attention at the roots. Specimens that have become "leggy" and have lost a quantity of the bottom leaves should be cut down to a desired length below some of the aërial roots, and potted again as compact specimens. The portions may be potted singly, or three or more stems may be placed together

in pots of a suitable size, or in narrow boxes or troughs. Whichever receptacle is employed, it should be provided with clean crocks for drainage purposes. A suitable compost is equal parts Osmunda-fibre or A 1 fibre and Sphagnum-moss, cut up rather short, mixed with crushed crocks and small lumps of charcoal. Plants that do not require to be cut down should have all the old soil washed from their roots, and new soil provided. This Vanda is an aërial-rooting species, and it is advisable to fasten the stems to stakes of Teak or some other hard wood, to which the clinging roots may attach themselves. The stakes should be of sufficient length to allow for 18 inches or so of growth. When potting is finished, the plants should be afforded a thorough watering at the roots, and be placed in a house having a southern aspect and humid atmosphere. They should be shaded for a few days, and, as soon as they have recovered from the effects of repotting, they may be exposed fully to the light, syringing them overhead frequently. When the season's growth is completed, water should be withheld gradually, and for a period of at least four months the plants should receive no water at the roots, but should be syringed occasionally to prevent the foliage and stems from shrivelling. These conditions should be maintained until flower-spikes are seen to be pushing from the stems, when the plants may again be subjected to moist conditions. Vanda Hookeriana and V. Miss Agnes Joachim should receive the same cultural treatment.

PLANTS UNDER GLASS.

By E. HARRISS, Gardener to Lady WANTAGE, Lockinge Park, Berkshire.

WINTER-FLOWERING PELARGONIUMS.—No time should be lost in finally potting Pelargoniums intended for winter flowering. The plants may be placed out-of-doors in a position fully exposed to the sun and water afforded with care until the pots are full of roots. At this stage stimulants may be given sparingly, increasing it in strength as the season advances. Pinch out the points of the strongest growths and remove all flower-buds as soon as they appear.

SALVIA SPLENDENS.—Cuttings of Salvia which were rooted in March should now be ready for their final potting. Pots 7 inches or 8 inches in diameter will be large enough. A compost of good fibrous loam, leaf soil, old Mushroom bed manure, wood ashes, and sharp sand, forms an excellent rooting medium. See that the pots are clean and well drained, and pot the plants firmly. Examine the foliage for insect pests before potting, and dip the plants in an insecticide should there be the least evidence of red spider or aphis. When potted, move them to their summer quarters, preferably in some position which is sheltered from the sun during the hottest part of the day. The pots should be plunged in ashes.

PLUMBAGO ROSEA.—Old plants of Plumbago rosea which have been repotted must be given every encouragement to develop strong, healthy growth during the next few weeks. During hot weather the atmosphere should be kept moist by frequently damping the surfaces in the house. Syringe the foliage with rain-water in the morning and at closing time in the afternoon, and to keep the plants free from insect pests syringe them about once a fortnight with insecticide. Young plants which have been rooted this spring should be shifted when ready into their flowering pots, using a rich, open compost.

CHRYSANTHEMUMS. The work of transferring Chrysanthemums to their final pots should be accomplished with as little delay as possible when the plants are ready. Prepare sufficient soil to pot all the plants and place it under cover. The compost should consist chiefly of rich fibrous loam, leaf-soil, well-decomposed horse-manure, wood ashes, coarse sand, and crushed bones. The potting must be done very firmly, or the plants will always be in need of water. They may be arranged in their summer quarters when all the plants are potted, and, if possible, the pots should be partly plunged in ashes. This will entail a little more labour now, but it will save much labour later in watering. Recently-potted plants must be very carefully watered until the pots are again full of roots. They should be kept rather dry for the next few weeks. Syringe them two or three times a day, and damp between the plants frequently when the weather is very hot. It is a great saving of labour to plant a portion of the plants on a well-prepared piece of ground. Those which will be required chiefly for cutting may be treated in this manner.

THE FLOWER GARDEN.

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

PROPAGATING FROM EYES.—A number of herbaceous plants may be readily increased from the stalks, which are cut into lengths containing four knots or eyes. These, if inserted into sandy soil in a cool frame to half their depth, profusely watered, shut up close, and shaded, will duly produce roots and shoots. The difficult Scottish Rocket is easy to propagate in this way, as well as Phloxes, Hollyhocks, and many others. The stems have to be neither too young nor yet too hard, and it is about this time of year that they are in proper condition for rooting.

ROSE CUTTINGS.—Roses propagated from cuttings inserted last autumn may be lifted and re-planted in turfy soil. They should be planted not nearly so deeply as they were at first, and roots that have outgrown others on the same plant should be cut back. Before filling in the soil completely, soak the ground with water, and an hour or so subsequently fill in the rest of the soil. In ten days or a fortnight afterwards apply a surface dressing of fertiliser, consisting of superphosphate and sulphate of ammonia, or soot, and other quick-acting manures, and hoe the surface deeply. The plants will make splendid material for autumn planting.

CLIMBING ROSES.—It conduces much to the ease of training Climbing Roses to tie or tack in rapid-growing young shoots as they develop. Certain varieties produce far more shoots than are needed to furnish the trellises for another year, and if not done earlier the less well-placed, though not necessarily all the weak shoots, should be at once cut out. It is possible to have too gross shoots, which ripen so badly as to be unable to withstand a severe winter. Hence the value of those so-called weaker shoots, which are more reliable.

THE HARDY FRUIT GARDEN.

By JAS. HUDSON, Head Gardener at Gunnersbury House, Acton, W.

MULBERRIES. One of our Mulberry trees is producing an abundant crop of fruit. The tree is growing in cultivated ground that has been kept hoed, and is a good variety. The berries will be doubly valuable this coming season for preserving purposes, as there is a shortage of stone fruits, and they should prove useful for mixing with early ripened Gourds for preserves. Mulberry trees are frequently planted on lawns, and in such situations it will be well to water them when the fruit is swelling. The soil around such trees will need pricking up with a fork to enable water to penetrate more readily to the roots; where the trees are growing on mounds this attention is doubly needed.

QUINCES. Given a moist surrounding, the Quince needs but little attention at any time, and the trees will usually carry a full crop of fruit. It is seldom necessary, so far as my experience serves me, to have to thin the crop. Shoots that are growing too strongly should be stopped in good time, in order to preserve the balance of the tree. An occasional branch may need some support, as the foliage in itself is a considerable weight, and the branch may become very heavy after rains. I have known branches with a crop of fruit to add to the weight, to snap off after heavy rains. A forked stake makes a good support.

EARLY STRAWBERRIES.—This season we picked our first ripe Strawberries out-of-doors on June 13, which is an earlier date than ever before, and four days in advance of last year. The two varieties that gave ripe fruit on that date were King George V. and Keen's Seedling. I like the former decidedly better than Royal Sovereign; it does not make such luxuriant leafage, the fruit is more shapely, and of an excellent colour. Growers will do well to add this sort to their collection. Keen's Seedling still maintains its position as an early-cropping variety, but it needs a frequent change of soil. Laxton's Fillbasket is well named; our plants forming a bed of this variety are just swelling a heavy crop, and they are robust and healthy. This Strawberry stands a dry season remarkably well, whereas Waterloo, and others of that type, prefer a wet, dripping time, even when ripening their berries. Our first Alpine Strawberries are just about ripe, and the plants are bearing a very heavy crop. Those for the late autumn crop are still having the spikes removed and the ground about them kept clean.

NETTING BUSH FRUITS.—An effort should be made to get the work of netting of fruit bushes done as soon as possible. Birds will speedily take the first ripe Red Currants and Raspberries, and these early fruits are of the most value. Black Currants with us are a prodigious crop again this season, and although we have had big bud for some years, it makes but little difference to the crop. It pays to stop the shoots of Red and White Currants, but this work is often neglected, notwithstanding that it does not take much time. Aphis has not been troublesome to our bushes this season, and we have not been bothered with caterpillars. Those who have late Currants and Gooseberries on north walls will do well to keep them syringed occasionally and also watered at the roots. These late crops well repay for strict attention.

THE APIARY.

By CHLORIS

WATER.—When the queen is laying 2,000 to 3,000 eggs per day much water is required for the larvæ. At this time brooks are often becoming dry, so the bees are driven to seek their supplies round manure heaps—which is not hygienic. Therefore give them a good supply of clean water, as previously advised, and change it frequently.

HANDLING FRAMES.—The correct way to lift the frames is by the ends of the bars. Beginners are tempted to hold them by the metal ends, which may slip, and cause serious disaster. After lifting up a frame, for further examination, lower one end until the frame assumes a perpendicular position; give it a half-turn, lowering the other end, so that the comb is now wrong side up, and in a safe position for examination. Complete the inspection as soon as possible, but all movement must be firm, free from jarring, and without fussiness.

WARNING. When the bees are seen vigorously fanning at the entrance the bee-keeper should at once investigate the cause. It may be that the inmates require more air, which may be given by increasing the width of the entrance; in very hot weather it may be necessary to wedge up the whole of the brood-chamber off the floor-board. If this fails to allay the bees' uneasiness, disease should be suspected, and an examination of the brood-chamber made. Foul brood gives off an unpleasant odour; the cappings of the cells are broken and the brood dead and rotten. Earlier in the season the "fanners" may be at work on the alighting board because stores of food are fermenting.

TO GET BEES OUT OF TREES, WALLS AND OTHER PLACES. When a swarm takes refuge in a hollow wall or tree it may be got out as follows: Take a "Porter" bee escape and fasten it on a piece of wood large enough to cover the opening, and in the evening firmly fix it. All other openings should be closed with putty or similar material. Over the entrance, about 1 foot above, fix a skep containing a small quantity of bees and the queen; fix it firmly to a board and suspend all from a nail securely driven into the wall or tree. A small nucleus hive, containing a queen and bees will suit admirably. In a few days the whole of the bees will be hived. Each day openings should be searched for and stopped, so that all bees are forced out through the escape. An established stock in such a place would require four or five weeks to collect.

EDITORIAL NOTICE.

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

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

Special Notice to Correspondents.—*The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.*

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 61.5

ACTUAL TEMPERATURE :—

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, *Thursday*, June 20, 10 a.m. Bar. 29.9. temp. 68.5 Weather - Sunny.

Potato Bloom.

Not for a good many years has there been such a show of Potato blossom as is to be seen at the present time. This precocious and luxuriant blossom, particularly on second earlies, is doubtless to be attributed to the remarkable season, and its influence on growth. The haulm grew away at a tremendous pace immediately the sunny weather succeeded the cold, damp spell, and the mass of blossom now showing is doubtless due to the rapid drying out of the light soils on which the Potatos here referred to are growing. Common sense would indicate that luxurious blossoming of the Potato must be incompatible with full tuber formation, and experiments confirm this view. Some year or two ago Messrs. Sutton and Sons carried out experiments on the effect of removing the blossoms from Potatos, and found that the removal made an appreciable difference—some 10 per cent., if we remember aright—to the crop. A difference of this magnitude—say, a ton to the acre—is by no means negligible in these times; but, unfortunately, the scarcity of labour will make it extremely difficult, and in many cases impossible, to apply the means of preventing this loss by systematic removal of the flower heads. Nevertheless, where this is possible it is manifestly well worth doing. To do it effectively, the flower-heads should be removed whilst they are in their young stage, for evidently after the flower-head is fully formed a good deal of the energy and material of the plant has already been wasted—so far as tuber-formation is concerned. With little practice it is easy to discover and pinch out the flower-buds as soon as they are visible at the points of the stems. It takes about half an hour to go over 10 rods thoroughly, and it is doubtful whether it is worth doing unless it is done quite thoroughly.

In the case of another crop—the Onion—the same tendency is manifest, and transplanted Onions, at all events those planted in light soils, are beginning to bolt. Where this is the case, no time should be lost in picking out the young flower-heads. If this is done, the crop may be in large measure saved; but if it is neglected, the bulbs will not swell.

The drought has proved unkind to transplanted plants in general. Maize reared under glass and put out in the open, even when it was lucky enough to be well watered in, is showing no tendency to "pick up." The leaves remain yellow, the plants are making little growth, and are in marked contrast with the rich green and vigorous stand of some plants. Indeed, it is evident that the vagaries of our climate make it impossible for the gardener ever to be sure which method—of direct sowing or transplanting—will give the better result; although it may be said that on the average transplanting of such crops as Onions and Maize is to be preferred. In the case of Tomatos out-of-doors we have no choice, and this year plants put out are standing still so far as growth is concerned, and, what is worse, making poor but exhausting attempts to flower.

These observations must be taken to apply to the lighter soils lacking substance and water-holding capacity. Such soils flatter the gardener in ordinary years, but in a year such as the present they reveal the nakedness of the land, and teach the valuable lesson that the fertility of the garden can only be established on a basis of rich humus provided by heavy and repeated applications of farmyard manure. Artificials alone in such light soils cannot suffice the plants. Their rôle is supplementary, and not fundamental. Their use is of inestimable value and assistance to the gardener, but they must be employed together with, and not in substitution of, organic manure.

THE LATE MR. R. HOOPER PEARSON.—The funeral of the late Mr. R. HOOPER PEARSON took place on Saturday, the 15th inst., at Putney Vale Cemetery, which is situated on the outskirts of the beautiful Wimbledon Common. The first portion of the burial service was read in St. Anne's Church, Wandsworth, and those present included Messrs. JAMES O'BRIEN, W. HALES, A. GROVES, W. J. BEAN, A. OSBORN, W. HONESS, A. DAWKINS, W. W. PETTIGREW, T. HUMPHREYS, T. LEWIS, and G. F. TINLEY (*Gardeners' Chronicle*). Several other horticulturists were present at the interment, including Mr. JAMES HUDSON, representing the Council of the Royal Horticultural Society; Messrs. G. J. INGRAM, secretary of the Gardeners' Royal Benevolent Institution, J. MCKERCHAR (Horticultural Club), J. HEAL, W. CUTHBERTSON, J. WEATHERS, A. C. BARTLETT and H. H. THOMAS.

AT the meeting of Directors of the "Gardeners' Chronicle, Ltd.," held on Wednesday last, a resolution was passed expressing the condolence of the Directors with Mrs. and Miss PEARSON in their bereavement, and placing on record their appreciation of the devoted services which Mr. PEARSON had rendered to the *Gardeners' Chronicle* during the 26 years he had been associated with the paper.

TRIBUTES FROM CORRESPONDENTS.

The news of the death of Mr. ROBERT HOOPER PEARSON will be received with feelings of sincere sympathy for his widow and daughter by a wide circle of gardeners and amateurs. He bore his prolonged illness with fortitude, but his end came all too soon. He had endeared himself to a very large circle of friends not only in the British Isles but far beyond the seas by his unostentatious, kind and courteous bearing; he was one of nature's gentlemen. As one who was privileged to enjoy his friendship for about thirty years I should like to be allowed to say how truly his character is portrayed in the leading article on p. 246 of last week's issue.

I write from a very intimate knowledge of his private life, which was very happy, pure, and lovable, and I can truly say that I never knew him do a mean thing, or suggest anything open to suspicion. His ideals were very high. He was always ready to help others in any good work, and to-day there are many who are grateful to him for his wise and encouraging counsel.

Horticultural journalism has lost an upright and valued member. In addition to possessing great literary gifts, he had a thoroughly practical knowledge of the various branches of gardening, which he turned to excellent use in his official capacity, in which sound judgment, tact and discretion were such valuable qualities. His life's interest was centred in the *Gardeners' Chronicle*, for which he laboured with untiring devotion, and on many occasions beyond his strength. *T. Humphreys, Birmingham.*

Although not unprepared for the death of Mr. R. HOOPER PEARSON, the news came as a great shock to me, one of his oldest London friends, for our acquaintance dated from the first week of his joining the staff of the *Gardeners' Chronicle*, since which time we have been the most intimate of friends.

It might be truly said that he lived for his work solely (for he really died in harness); a man of no particular hobby, if I may except his garden, his whole time and energetic nature were devoted to the furthering of his knowledge of the vegetable kingdom, and in transmitting that knowledge to the horticultural world through the medium of the *Gardeners' Chronicle* and of the books on gardening with which his name will long be associated.

In private life Mr. R. HOOPER PEARSON was seen at his best, a charming host, a loving father, and devoted husband. His home life was an ideal one, and in looking back on the many happy and instructive evenings spent in each other's company in our respective homes, I am cruelly reminded that I am deprived of his genial and kindly presence, and that I and my family, in common with his many friends, are left behind to mourn the loss of a true and steadfast friend. *J. F. McLeod*

It was with the deepest sorrow and regret I read in last week's *Gardeners' Chronicle* of the death of Mr. R. HOOPER PEARSON. The news came as a great surprise to me, for I did not know that he was ailing much, and a long promise to see him I regret was not fulfilled. What personal knowledge I have of Mr. PEARSON fully coincides with the remarks made in the leading article of last week's issue. It is many years since we first met, and I mourn the loss of a Cardiff Castle colleague, and likewise a widely esteemed and honoured horticulturist. *W. H. Clark.*

It was with great grief that I read of the death of the worthy R. HOOPER PEARSON. He was one of those men whom we all esteemed and admired, and the loss of him will be widely felt. *W. Botting Hemsley.*

HORTICULTURISTS AND MILITARY SERVICE.—So many Orders and Regulations have recently been issued that a short explanation of the present position may possibly be useful to nurserymen and others affected. There have recently been issued in particular two Orders which affect the point, namely, Order M.N.S.R. 63, dated May 23, 1918, and M.N.S.R. 53, dated June 6, 1918. The first-mentioned Order deals more especially with agriculturists, but it includes also market gardeners, fruit farmers, and men occupied in the wholesale food seed industry as experts, or as heads of departments of the business, and men occupied in forest tree nurseries as seed experts. This Order revokes as from June 11, 1918, all certificates of exemption

granted, on occupational grounds, to the classes of men to whom it applies, irrespective of age. The object of the Order is to bring all these men under the jurisdiction of the County Agricultural Executive Committees. These committees will have power to decide whether the men coming before them are either to join the Army or to remain in their present employment. As a matter of fact, it is intended to "comb out" under this Order at present only those men who are under the age of 31 and who are fit for general service (Medical Category A or Grade 1). This arrangement can, however, be altered at any time without further order. Consequently, men engaged in the occupations to which the Order applies should, irrespective of age, lose no time in communicating with their County Agricultural Executive Committee. If, however, these men have any personal or domestic reasons on which they seek to rely, they must bring these forward by making the usual application to the local Tribunal, and not to the County Agricultural Committees. The proper course is to lodge the application with the Clerk to the Tribunal, and to arrange with the Ministry of National Service, at or before the time of hearing, that this application should stand over generally, with leave to restore it for hearing, if the War Agricultural voucher should at any future time be withdrawn. Strictly speaking, these applications on personal grounds should have been lodged within four days from June 11, 1918, but the Ministry of National Service has power to allow application to be lodged at a later date if good grounds are shown. The other Order referred to above—M.N.S.R. 53—applies at present only to certain classes of nurserymen, namely:

Ref. No.	Classes or Description	Medical Grade or Category. Grade.	Category.	"Fourth" men affected by the Order.
139	Nurserymen wholly or mainly engaged in the cultivation of flowers and fruits under glass or flowers, ornamental trees and shrubs out of doors			
	(a) Foremen	1	A	1*-6
	(b) Carters, Lorrymen (horse or power)	1	A	1-5
	*(c) All other classes of workmen	1	A	1-5
		2	B1, C1	1-5

Application for exemption on the grounds of personal or domestic hardship may, by leave of the local Tribunal, be made, but, in that case, application must be lodged with the Clerk to the Tribunal within four days after June 22, when the existing exemption certificate on occupational grounds is revoked, namely, not later than June 26, 1918. No further application on the grounds of occupation, as distinct from domestic or personal hardship, can, however, be made. (Probably another Order will shortly be made on the same lines revoking the certificates of men of higher age and lower grades and categories than those mentioned in the Order.) It will be observed that this Order applies to fruits grown under glass, but the authorities do not contend that it applies to Tomato growers. Men over 41 who have become subject to military service under the recent Act must apply to the Local Tribunal within seven days from the date of their medical grading, but in practice the Tribunals are not accepting applications for any men below Grade II., and are directing them to keep back their applications until they receive their calling up notice. Men, however, who are dissatisfied with their medical grading must apply within *five* days to their Appeal Tribunal for a fresh medical examination. They would do well to be examined beforehand by their own medical attendant and to produce his certificate to the Army doctors. A private test for kidney trouble is especially desirable, as the Army doctors do not usually apply this.

* Subject to the limitation specified in Part II. of the schedule.

FLOWER FAIR IN TRAFALGAR SQUARE.—The Flower Fair mentioned in our issue of May 25, p. 213, was opened on Thursday last by the Duke and Duchess of PORTLAND. Other distinguished persons present included the ex-Queen AMÉLIE OF PORTUGAL and the Duchess of FIFE. A number of the large nursery firms are giving their support to the Fair, the proceeds of which are to be devoted to the maintenance of British ambulances for use on the French Front. Messrs. SUTTON AND SONS have put up a fine exhibit of vegetables in their best style; Messrs. E. WEBB AND SONS are showing stove and greenhouse plants; and Messrs. PIPERS have set up a miniature water garden and a fine group of flowering plants. Messrs. R. H. RAHE, LTD., are showing herbaceous plants; Messrs. BARR AND SONS, dwarf Japanese trees; Messrs. J. CHEAL AND SONS, Dahlias; Messrs. H. CANNELL AND SONS, Roses; Messrs. ALEX. DICKSON AND SONS, Roses and Sweet Peas; Messrs. WATERER, SONS AND CRISP, Roses; Mr. L. R. RUSSELL, trees and foliage plants; Messrs. R. WALLACE AND CO., herbaceous plants, Irises, and Water Lilies; and Messrs. WHITELEGG AND CO., Alpine plants of various kinds. In the centre of the square a stand has been erected for the sale of cut Orchid blooms, presided over each day by a different "saleswoman." Lady SEELY officiated in this position on the opening day. There are also a number of decorated barrows, filled with flowers which are being sold for the cause by voluntary lady helpers, and flower-sellers with baskets patrol the square. Military bands, lent for the occasion, help to enliven the proceedings. On Friday the show was opened by Lord BERESFORD, and, as was only fitting, on this day the band was that of the Royal Marines. The show is to remain open until the 26th inst., inclusive, and in case of wet weather most of the exhibits are under canvas. All the staging and covering has been lent by the Royal Horti

FIG. 111.—MILTONIA LADY VEITCH (reduced).
(See Notes in the Orchid Committee, p. 259.)

AWARD OF THE NEILL PRIZE.—The Neill Prize in Horticulture for the period 1916-1918 has been awarded by the Council of the Royal Caledonian Horticultural Society to Mr. JAMES WHITTON, Superintendent of Parks, Glasgow. The prize is in the gift of the Society, and is awarded every second year to a distinguished Scottish botanist or cultivator. Mr. WHITTON was born at the Gardens, Methven Castle, Perthshire, where his father was gardener for nearly 50 years. He began his training on June 1, 1865, at Thirlestane, Castle Lauder, the seat of the Earl of LAUDERDALE. In November, 1870, he

cultural Society, and Mr. W. E. BISSET designed the plan and carried out all the preliminary arrangements.

went as fourth journeyman to Glamis Castle, when the new gardens formed by the Earl of STRATHMORE were rising into fame through the wonderful Grapes grown and successfully shown by the gardener, Mr. GEORGE JOHNSTON. In the spring of 1872, when in his 21st year, Mr. WHITTON was promoted foreman, and remained in that position until November, 1876, when he was appointed gardener to JAMES HOULDSWORTH, Esq., of Coltness, Wishaw, and held that situation for 11 years. On the death of Mr. JOHNSTON he returned to Glamis, and was gardener there until March, 1893, when he was appointed Superintendent of Parks to the Corporation of Glasgow. During the 25 years he has served that Corporation the city has widely extended its boundaries and the number of parks has increased from six to twenty-six, whilst the smaller open spaces have correspondingly increased. In 1901 the Botanic Gardens were added to Mr WHITTON'S charge, and a year later, to the title of Superintendent of Parks, Curator of Botanic Gardens was added. When the Highland estate of Ardgoil, in Argyllshire, with an area of 14,740 acres, was presented to the city by Lord ROWALLAN, the supervision of it was added to Mr. WHITTON'S duties, although its administration does not fall to the Parks Committee. In 1913 the Council of the Royal Horticultural Society conferred on him the Victoria Medal of Honour, so that, with the award of the Neill Prize by the Royal Caledonian Horticultural Society, his efforts to maintain the tradition of Scottish gardening have been recognised by his many friends throughout the country. Last year, on the recommendation of the Lord Provost of Glasgow, he was made a Justice of the Peace for the County of the City of Glasgow.

IMPORTANCE OF THE POTATO CROP.—The lecture on "Potato Growing," announced in the last issue, was delivered by Mr. W. CUTHBERTSON in the Caxton Hall, Westminster, on Wednesday last, and was well attended. Mr. PROTHERO was unable to be present, and the chair was taken by Sir CHARLES BATHURST, M.P. The lecture was arranged by the Royal Horticultural Society, and several members of the Council of that Society, including the President, Lord GRENFELL, Lord LAMBOURNE, and the Rev. W. WILKS, were present on the platform. The chairman in his opening remarks stated that in consequence of the increasing drain upon our sugar stores it might become necessary later in the year to reduce the sugar ration of the people. He hoped it might long be postponed, but he would urge people to put by some of their ration, while, if it did take place, the Potato might relieve the position. It was no exaggeration to say that the bountiful crop of Potatos last season, coupled with unusual prescience on the part of the Government Department last spring, had saved us from famine. It was the Potato, above all crops, that had supplied the valuable bridge last winter and spring which enabled this country to span the critical stream of scarcity which might have carried us away. A fuller report of the proceedings will be published in the next issue.

RETIREMENT OF MR. JAMES WARD.—Mr. JAMES WARD has relinquished, owing to continued ill-health, the post of superintendent of the Norwich Public Parks, which he has filled since December, 1902. The spring and summer bedding in these parks have for years past borne eloquent testimony to the unfailing skill of a master horticulturist. Previous to taking up his duties at Norwich he was for some years head gardener and forester to Lord DUNLEATH.

LONDON STABLE MANURE.—Potato-growers in the Home Counties who are accustomed to use London stable manure in large quantities should buy early in view of the uncertainty of delivery, and clamp in the field where it is to be used next year. The clamp should be sheltered as much as possible from rain and sun, and it should be covered with a layer of earth. Summer storage of manure is undesirable as a general rule, but in this case it is probably the least risky course; it offers the advantage that the manure can be put into the land at the first ploughing in autumn.

WART DISEASE OF POTATOS.—The Food Production Department is prepared to arrange for the inspection of crops of Potatos of varieties immune to wart disease on application in writing from growers in England and Wales in districts regarded by the Department as suitable for the production of "seed." This arrangement will apply only to growers whose area under any one variety is not less than ½ acre. The object of the inspection is to secure, as far as possible, that pure "seed," true to type, shall be available for planting in 1919 in areas certified as infected with wart disease. Where, after inspection, the Department is satisfied that the stock is pure and the general condition of the crop satisfactory, a certificate to that effect may be issued to the grower.

WAR ITEM.—Mr. W. N. WINN, of the Royal Gardens, Kew, has received notification of the death from wounds of his son, Private J. N. WINN, Civil Service Rifles.

HOME CORRESPONDENCE.

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

POTENTILLA AMBIGUA (see p. 243).—I agree with Mr. S. Arnott about the beauty of Potentilla ambigua, and have known it for 38 years. Plants are still offered by some hardy plantsmen under its correct name. It is possible there are two forms in cultivation, including the plant known as P. dubia; one blooms from May to July, and the other in July and August. P. Tonguei is a garden-raised plant, growing 6 inches high. I have seen one answering to the colour and named P. Tonguei, more nearly three times that height, and the soil in which the plant was grown was not particularly fertile. Hybrids may sport, however. Regarding P. nitida, the third of the "real jewels" of the genus, I consider it does not act up to its reputation in the lowlands or plains, according to the accounts given of it by travellers in the Alps. It is neat and compact enough, but the colour is poor, and many Alpines deteriorate in this way when cultivated at low elevations. Besides P. ambigua, I would name two other Himalayan species that were quite common in large and small gardens during the seventies of last century, and are still quite plentiful, namely, P. nepalensis and P. argyrophylla atrosanguinea. *J. F.*

IRISES AND DISEASE (see pp. 235, 248).—May I express my deep indebtedness to Mr. W. R. Dykes for his timely and instructive remarks on this subject on p. 248. I started an Iris garden here last year under the advice of a well-known expert and grower, who approved the site and the plan of the garden, and arranged the grouping of the different varieties. The ground had been well cultivated previously, and the only suggestion the expert made was that I should give it a good dressing of lime, which I did. The plants, which consisted of very fine clumps, were nearly all put in their permanent quarters in September. The groups, as a rule, consisted of 12, 18, or 24 plants of each variety. I noticed that some of the leaves were brown, but attached no importance to it, for at that time I had not heard of an Iris disease. In the spring I noticed that the leaves of some varieties began to soften, turn first yellow, then brown, and would come away from the plants when pulled. This trouble started at the base of the leaves. For some weeks brown patches have been forming at the tips of the leaves, as well as here and there along the surface and edges; the spots increase in size, and eventually coalesce, the entire leaf becoming affected right down to the rhizome. I have been advised to try superphosphate of lime, and I have just got a supply of this fertiliser, so that the remarks of Mr. Dykes come to me at an opportune moment. *Cecil A. P. Osborne, The Grove, Old Catton, Norwich.*

SOCIETIES.

ROYAL HORTICULTURAL.

JUNE 18.—Although the fortnightly meeting at the London Scottish Drill Hall on Tuesday last was not quite so well attended as on recent occasions a fair number of visitors were present. The chief floral features were Sweet Peas, Delphiniums, Roses and Paeonies.

The Floral Committee recommended five Awards of Merit to novelties and 11 medals for collections.

The chairman, Mr. H. B. May, made a sympathetic reference to the death of Mr. R. Hooper Pearson, and spoke of his valued services to horticulture, and particularly in connection with the International Horticultural Exhibition, 1912, the Gardeners' Royal Benevolent Institution, the Horticultural Club, and the Floral Committee, of which Mr. Pearson had been a member for many years.

The Orchid Committee recommended two First-class Certificates, three Awards of Merit, and one Preliminary Commendation to novelties.

The Fruit and Vegetable Committee made no award.

Floral Committee.

Present: Messrs. H. B. May (in the chair), John Heal, G. Reuthe, J. W. Moorman, John Green, C. R. Fielder, J. F. McLeod, Arthur Turner, C. Dixon, John Dickson, E. F. Hazleton, W. P. Thomson, Chas. E. Pearson, Jas. Hudson, E. H. Jenkins, E. A. Bowles, L. Morris, W. J. Bean, J. T. Bennett-Poë, H. Cowley, W. Cuthbertson, Thos. Stevenson, Wm. Howe and R. C. Notcutt.

AWARDS OF MERIT.

Sweet Pea Ivorine.—A distinct grandiflora variety. The buds are pale yellow, but the large, fully expanded blooms are the colour of old ivory.

Sweet Pea Mrs. Hitchcock.—This beautiful flower is almost ideal in form and setting; its colour is best described as pale, creamy salmon-pink.

Sweet Pea Dobbie's Maroon.—A variety of a bright shade of maroon and of large size. It is a handsome flower, suitable alike for exhibition and for garden decoration. All three varieties were shown by Messrs. DOBBIE AND CO.

Sweet William Scarlet Beauty.—An exceptionally sturdy plant, bearing large, compact heads of fragrant, rich scarlet flowers. This most desirable flower was shown by Messrs. DOBBIE AND CO.

Delphinium Mrs. Baker.—A large, erect, and well-disposed spike of Oxford-blue flowers which have lavender centres. Shown by Mr. F. CRESSWELL, The Cottage, Hayes, Middlesex.

GROUPS.

A magnificent collection of border flowers, principally Delphiniums, herbaceous Paeonies and Irises, was arranged by Messrs. R. H. BATH, LTD., who were rewarded with a *Silver-gilt Flora Medal.*

Messrs. DOBBIE AND CO. received a *Silver-gilt Banksian Medal* for a collection of Sweet Peas which comprised "12 of the best standard varieties," together with the three sorts which received awards, and another novelty—Mrs. T. Jones, which is of uncommon bluish mauve colour and of much more than average merit.

A *Silver-gilt Banksian Medal* was awarded to Mr. L. R. RUSSELL for Caladiums, and small pot plants of Medinilla magnifica.

Silver Flora Medals were awarded to Messrs. KELWAY AND SONS for a very large collection of handsome Delphiniums; Mr. G. W. MILLER for a miscellaneous collection of border flowers, principally Delphiniums and garden Pinks in variety; and to Messrs. H. B. MAY AND SONS for their customary group of greenhouse Ferns, amongst which were interspersed pot plants of Hydrangeas, Fuchsias, Heliotropes, and Verbenas.

Silver Banksian Medals were awarded to Messrs. B. R. CANT AND SONS for a collection of cut Roses; to the Rev. J. H. PEMBERTON, for Roses, including Star of Persia, a new pillar variety bearing relatively large, rich yellow blooms; to Mr. JAMES DOUGLAS, for border

Carnations; and to Mr. G. REUTHE, for a collection of various shrubs and Alpines.

A *Bronze Banksian Medal* was awarded to Messrs. WM. CUTBUSH AND SONS for a group of Perpetual-flowering Carnations.

An interesting collection of Philadelphus was contributed by Mr. CHARLES TURNER, in which Norma, single white, Virginal and Boule d'Argent, doubles, were of great merit.

Mr. WALTER EASTEA showed Romeo, a new Wichuraiana seedling Rose with unusually double flower of dark crimson colour, and Little Meg, a dwarf Polyantha variety with pretty flowers.

Orchid Committee.

Present: Sir Jeremiah Colman, Bart., in the chair; Messrs. Jas. O'Brien, hon. secretary; William Bolton, C. J. Lucas, Frederick J. Hanbury, W. H. White, S. W. Flory, J. Charlesworth, Chas. H. Curtis, E. R. Ashton, A. McBean, Frederick Sander, Pantia Ralli, J. Wilson Potter, Stuart Low, R. A. Rolfe, and R. Brooman-White.

AWARDS.

FIRST-CLASS CERTIFICATES.

Miltonia Lady Veitchiæ fig. 241, p. 221 *vexillaria Memoria C. D. Orcutt* × *Jules Hye de Crom*, from Messrs. ARMSTRONG AND BROWN, Orchidhurst, Tunbridge Wells.—A charming advance on the superb strain raised by the late Jules Hye de Crom, retaining all the good features of Miltonia Jules Hye de Crom (*Hyeana* × *vexillaria*), but with the rich colour of the mask on the lip intensified and rendered very conspicuous against the clear white ground. The plant bore five flowers of perfect shape; the sepals, petals, and lip are white with a shade of rose on the bases of the petals and a rich maroon triangular mark on the lip, changing to ruby-crimson towards the front portion, which bears short radiating lines of maroon colour.

Odontoglossum Primavera xanthotes × *crossum xanthotes* × *crispum xanthotes*, from Messrs. ARMSTRONG AND BROWN.—The best of the remarkable section of xanthotes crosses which is variable among the colour-characteristic pure white ground with varied brown-yellow markings. The plant bore a fine spike of seven large snow-white flowers, the sepals having in the middles clusters of brown spots, broken into broad petals in occasional stud of the same tint, and the lip a chrome-yellow base and crest with a white front.

AWARDS OF MERIT.

Odontioda crispum × *The Bishop*, from Mrs. M. F. OGILVIE, The Shrubbery, Oxford (gr. Mr. Bahnforth).—A home-raised seedling of typical white O. crispum with flowers 3½ inches wide and of fine substance; the blooms are pure white with dark-red markings around the yellow crest.

Odontioda Trubizond (*Odm. Fascinator* × *Odm. Charlesworthii*), from C. W. BIRD, Esq., Manor House, West Wickham (gr. Mr. Redden).—A dark, handsome hybrid. The plant bore a spike of nine flowers, which in size and shape were equal to those of the Odontoglossum parent. The sepals and petals are dark reddish claret with a very narrow silvery margin. The lip is white in front and blotched with red, the median area in front of the yellow crest being dark red.

Disa Itala (*Blackii* × *grandiflora*), from Messrs. FLORY AND BLACK, Slough.—A progressive step, bringing the hybrid Disas up to the standard of *D. grandiflora* in size and with the freeness of growth and flower inherent in the Veitchian race of hybrid Disas. The lateral sepals are broad and bright rosy-mauve in colour; the white inside is slightly tinged with rose on the upper surface, whilst the cream-white petals have dark markings.

PRELIMINARY COMMENDATION.

Odontoglossum Armstrongii (*crispum* × *Armstrongiæ*), from Messrs. ARMSTRONG AND BROWN.—The best of the violet-coloured strain raised at Orchidhurst. The large, broad petalled flower has overlapping segments, which are well arranged. The ground colour is white; two-thirds of the sepals is covered with large violet-blue blotches, the broad-fringed petals having similar-coloured markings. The lip is white with a dark violet blotch and markings around the yellow crest.

GROUPS.

Messrs. ARMSTRONG AND BROWN were awarded a Silver-gilt Flora Medal for an extensive and well-arranged group of new and rare hybrid Miltonias, Odontoglossums, and Odontiodas, with showy Cattleya species and other interesting Orchids.

Messrs. CHARLESWORTH AND CO., Haywards Heath, were awarded a Silver Flora Medal for a fine group of hybrid Miltonias arranged with hybrid Odontoglossums, Odontiodas, Laelio-Cattleyas, and interesting species.

Messrs. STUART LOW AND CO. were awarded a Silver Flora Medal for a well-arranged group of hybrid Orchids. The showiest were Laelio-Cattleya Pelens (L.-C. Dominiana × C. Enid) with large flowers and specially fine dark lip, and L.-C. Tenera gloriosa (L.-C. Martinettii × C. Mossiæ). A fine selection of Cattleya Mossiæ were included in this exhibit.

Fruit and Vegetable Committee.

Present: Messrs. W. Poupart, in the chair; J. C. Allgrove, J. G. Weston, A. R. Allan, Edwin Beckett, A. Billson, F. Perkins, Owen Thomas, E. A. Bunyard, and Rev. W. Wilks.

Three varieties of Cos Lettuce brought up from trial at Wisley were of first-rate quality, and should be valuable, as they have hearted well in this exceptionally dry season, and on a light soil. For the present these Lettuces are known only by their trial numbers.

A box of seedling Strawberries of great size but irregular shape was exhibited by the Marquis of SALISBURY (gr. Mr. H. Primett), Hatfield, Herts.

Messrs. LAXTON BROS. set up 9 boxes of ripe Strawberries, all of excellent appearance.

KEW GUILD.

JUNE 8.—The annual general meeting of the Kew Guild was held in the Lecture Room at the Royal Gardens, Kew, on Saturday, the 8th inst. There was a good attendance, and Mr. Charles H. Curtis, the retiring president, presided. Honorary membership was conferred upon [illegible] who are serving in the forces of their country, namely, Lieutenant Major Veitch and Mr. Wm. Cobb, after the application of Mr. W. N. Wright, seconded by Mr. Fraser, of Exeter, on June 7. Mr. Nye Bayman, who is interned in Germany, sent a postcard asking to remain a member of *The Kew Guild Journal*. The committee's actions to act as almoner in the case of distressed members. The accounts showed a balance of £15 to against £6 brought forward from the previous year. Mr. Curtis again brought forward his suggestion that a suitable memorial should be raised to the memory of Kewites who have lost their lives in the war, with a record of all Kewites who have served in His Majesty's Forces. It was agreed that such a memorial should be raised, and the matter was referred to the committee for full consideration, and the hope was expressed that such memorial should be placed in the Gardens at Kew.

SCOTTISH HORTICULTURAL.

JUNE 4.—The monthly meeting of this Association was held on this date, Mr. R. Fife, president, in the chair.

Mr. E. L. Scarlett, Sweethope, Midlothian, read a paper entitled "How the Engineer can Assist in Horticulture." Mr. Scarlett stated that the commercial grower was continually on the watch for new labour saving appliances. The engineer had come to our aid in many ways, as, for example, in the case of movable glasshouses, which could be moved from site to site and cover perhaps a dozen different crops in a season. A great field was open to him in the sterilisation of ground in the open, in which Mr. Scarlett thought he might take a hint from some of the devices used in the present war. A machine to project flame on the ground while travelling over it might be devised, and it would also get rid of weeds and all other pests and sterilise the soil at one operation. Other matters dealt with were suggestions as to heating by means of gas instead of coal; heating by hot air instead of water; the use of poison gases under glass for destroying insects; cold storage, and transport of produce.

CROPS AND STOCK ON THE HOME FARM.

POTATOS.

GENERALLY the growth of Potatos is regular, the haulm having come through the soil evenly and strongly. Directly the rows can be distinctly seen use the horse hoe to disturb the soil, even if there are no weeds. If the plants have a weak appearance give them a dressing of soot or one cwt. of sulphate of ammonia per acre, sprinkling it between the rows previous to earthing up. The crop has a promising appearance; the growth is sturdy, good in colour, and regular in the rows. Especially is this the case where new Scotch seed was planted. There are a few complaints about the irregularity of early varieties, probably attributable to rooks, which were troublesome as the plants showed through the soil.

In stiff soil, where the surface has been thoroughly moved between the rows, the Potatos do not appear to be feeling the drought as yet. Horse hoe between the rows, and hand-hoe between the plants. Where the plants appear to require aid in growth, sulphate of ammonia, at the rate of 1 cwt. per acre, should be scattered between the rows prior to earthing up. This should be done early, so as to disturb the roots between the rows as little as possible.

CHARLOCK.

Where spraying was done with copper sulphate (at the rate of 16 lbs. to 50 gallons of water, or 22 lbs. to the ordinary spraying barrel, which is sufficient for two acres), Charlock, if not killed, will be so checked that seed cannot be matured.

SWEDES.

In northern counties this crop is well on the way to growth. In the south, where Swedes are largely grown by sheep farmers for penning on the field as a substitute for the manure cart, sowing is not usually done before the middle or end of June. When sown earlier the plants are often attacked by mildew, or the flesh becomes hard or lacking in succulence, which for sheep and cows is the all important point.

Where there is a probable crop of Charlock in the soil, plough and harrow the surface and allow the Charlock to germinate; then, by harrowing promptly, the crop may be killed. After this if the weather is suitable, drill in the Swede seed. Often ploughed soil, with a fine filth, is all in favour of a good Swede plant, and is one of the best means of warding off an attack of Turnip fly.

For the benefit of lambs in spring, it is wise to sow Rape with the Swedes. Following a severe winter, the Swedes do not always produce tops at the right time, but the Rape is less liable to injury by frost. With a five coulter drill, one row of Rape should be sown to four rows of Swedes.

TRIFOLIUM.

This green crop is a valuable food for horses. Trifolium is sustaining, and, with a reduced ration of Oats, which usually occurs when the Trifolium comes in use in June, is especially valuable. By that time the plant is matured, the flower having faded. Only half the usual quantity of hay should be given at first, gradually reducing the hay as the Trifolium matures in its growth. To grow good Trifolium the soil should be fairly rich and clean. Often the seed is sown on stubble after Wheat and Oats, but in some seasons the corn cannot be cleared in time. Early sowing is important; the first or second week in August is a good time. A clean plot recently ploughed and summer fallowed, is a good soil to choose. The early red and late white varieties are the best. *E. Molyneux.*

Obituary.

WILLIAM BARRON. We regret to announce the death of Mr. William Barron, of the firm of Messrs. William Barron and Son, Ltd., landscape gardeners and nurserymen, Borrowash, Derby. Deceased was managing director of the above firm for a number of years, but owing to his health failing, he went to Australia in 1915, and resided there up to the time of his death.

MARKETS.

COVENT GARDEN, June 19.

Cut Flowers, &c.: Average Wholesale Prices

	s.d. s.d.
Arums—	
— (Richardias), per doz. bl'ms.	9 0–12 0
Carnations, per doz.	
— blooms, best American var	2 0– 3 6
Coreopsis, per doz. bunches	3 6– 4 0
Cornflower, blue, per doz. bunches	1 3– 2 0
— pink, per doz. bunches	2 6– 3 0
Croton leaves, per bun.	1 3– 1 6
Daisies, large white, per doz. bun	2 0– 3 6
Delphiniums, various, per doz. bun	6 0– 9 0
Gaillardia, per doz. bunches	4 0– 5 0
Gardenias, per box (12's)	4 0– 5 0
— (18's)	2 0– 3 0
Gladiolus Peach Blossom, per doz. bunches	21 0–24 0
— white, per doz. bunches	15 0–18 0
Gypsophila, pink, per doz. bunches	6 0 —
— white, per doz. bunches	9 0–12 0
Heather, white, per doz. bun	9 0–12 0
Iceland Poppies, per doz. bunches	3 0– 4 0
Iris, Spanish, per doz. bunches—	
— white	15 0–18 0
Iris, con.—	
— blue	12 0–15 0
— yellow	12 0–15 0
— mauve	12 0–15 0
Lapagerias, per doz. blooms	3 0– 4 0
Lilium longiflorum, long	15 0 —
Nigella, per doz. bunches	4 0– 8 0
Orchids, per doz;—	
— Cattleyas	10 0–12 0
Paeonies, 6's, various, doz. bunches	12 0–18 0
Pelargoniums, double scarlet, per doz. bunches	12 0–18 0
— white, per doz. bunches	5 0– 6 0
Pinks, white	2 0– 4 0
Roses, per doz blooms—	
- Frau Karl Druschki	2 0– 3 0
— Ladylove	3 0– 4 0
— Liberty	3 0– 4 0
— Madame Abel Chatenay	2 0– 3 0
— Niphetos	1 6– 2 6
— Richmond	2 6– 3 0
— Sunburst	2 0– 3 0
Stephanotis, per 72 sprs.	3 0– 3 6
Stock, English, per doz. bunches	10 0–15 0
Sweet Peas, various, per doz. bun	4 0– 8 0
Viola cornuta, per doz. bun	2 6– 3 0

REMARKS.—The market is well supplied with Cornflowers, Delphiniums, Gypsophila elegans, Irises, Poppies, Paeonies, Pinks, and large, white Daisies. Of the latter, the variety named Stella appears to be the most in demand. Several sorts of Sweet Peas are now offered for sale in excellent condition. Roses are also improving in quality; both indoor and outdoor blooms are offered in fairly large quantities. There is an increase in the supply of Gladiolus, both white and coloured. The cooler weather is more favourable for Irises, and the blooms now on sale are the best so far offered this season. Although Carnations are sufficient for the demand, prices remain firm for best quality blooms. Pyrethrums are finished for this season, but there is a good supply of white Stock.

In the Plant department decorative plants are receiving more attention. These include Erica, Crassula, Hydrangea, Marguerites, pink Spiraea, and pink Verbena.

Fruit: Average Wholesale Prices.

	s.d. s.d.
Cherries, per 4 lbs.	40 0–65 0
Figs, Worthing, per doz	4 0–15 0
Grapes:—	
— Black Hamburgh, per lb	2 6– 5 0
— Muscats, per lb.	3 0– 6 0
Lemons, per case	60 0– 90 0
Melons (each)	2 0–10 0
— cantaloupe (Continental)	20 0–30 0
Nectarines, per doz	8 0–24 0
Oranges, per case	60 0–100 0
Peaches, per doz.	6 0–30 0
Walnuts, kiln dried, per cwt.	110 0 —

Vegetables: Average Wholesale Prices

	s.d. s.d.
Artichokes, globe, per doz	6 0–10 0
— Jerusalem, per ½ bus.	2 6 —
Beans:—	
— broad, per bus.	6 6 —
— French (Channel Islands), per lb.	1 6– 2 6
Beetroot, per cwt.	6 0– 8 0
Cabbage, per doz.	1 6– 2 0
Carrots, new, per doz. bunches	6 0–10 0
— per bag	10 0–11 0
Cauliflowers per doz	10 0–12 0
Cucumbers, per flat (from 2 doz–4 doz.)	22 0–27 0
Garlic, per lb.	1 0 —
Greens, per bag	3 0– 5 0
Herbs, per doz bun.	2 0– 4 0
Horseradish, per bun.	3 6– 4 6
Leeks, per doz. bun.	3 0– 4 0
Lettuce, Cabbage and Cos per doz	0 6– 1 6
Mint, per doz. bun.	4 0– 6 0
Mushrooms, per lb.	2 0– 2 6
Mustard and Cress, per doz. punnets	1 0– 1 3
Onions, Egyptian, per cwt.	65 0 —
— spring, per doz. bun.	9 0–18 0
Parsley, per bus.	4 0 —
Parsnips, per bag	8 0–10 0
Peas, English, per bus.	10 0–12 0
Radishes, per doz. bunches	2 6– 3 6
Rhubarb, natural, per doz	8 0–12 0
Shallots, per lb.	1 0 —
Spinach, per bus.	6 0– 7 0
Sweeties, per bag	2 6– 4 0
Tomatos, per lb.	1 4– 1 6
Turnips, new, per doz bunches	4 0– 8 0
Vegetable Marrows, per doz.	12 0–14 0
Watercress, per doz	0 10–1 0

REMARKS.—In consequence of the absence of Strawberries an increased demand is anticipated for other fruits, which include Cherries, Nectarines, Melons, Figs, Peaches, Grapes (Black Hamburgh and Muscat of Alexandria), Red and Yellow Bananas, and Oranges. Asparagus is still available, and Peas and Broad Beans are plentiful. Forced Broad Beans are also fairly plentiful, but supplies of Cauliflowers are limited. The growers' consignments of Marrows, Mushrooms, and Cucumbers are about equal to the demand. *E. H. R., Covent Garden Market, June 19, 1918.*

ANSWERS TO CORRESPONDENTS.

APPLE EATEN BY MAGGOTS: *J. P.* The grubs are those of one of the Psyllas, which are frequently very destructive. Spray the trees at once with arsenate of lead, taking care to wet the young fruits. Do not let the spray material fall on Gooseberry or Currant trees, as it is very poisonous.

CUCUMBER FOLIAGE TURNING YELLOW: *E. B., Burwash.* The trouble may be due to a number of causes. The plants may have been somewhat starved before they were planted out, or received a check in some way, and, as the new leaves are of a healthy colour, this is probably the cause. Red spider will attack the undersides of the leaves, and this pest may also be responsible. The insects may easily be detected with a good glass, or even the naked eye. If red spider is the cause remove and burn the infested leaves and thoroughly syringe the underside of the remaining foliage with soft soap and water, promote a moist atmospheric condition, and never allow the plants to become dry at the roots. If you suspect the plants to be suffering from starvation apply a slight dusting of soot to the soil and keep the surface dressed with a little fresh compost consisting of half fibrous loam and half well-decayed leaf-soil.

GOOSEBERRIES DISEASED: *C. S. H.* The Gooseberries are attacked by American Gooseberry Mildew. Cut away all diseased shoots, and gather all affected berries and carefully burn them. Then spray the plants and the soil in which they are growing with liver of sulphur, 1 lb. in 32 gallons of water now, and 1 lb. in 24 gallons after July, with the addition of 1 to 1½ lb. of soft soap. Use nitrogenous manures sparingly. The best way to prevent a further attack next year will be to prune the trees early in October, taking care to remove all shoots showing the least trace of disease, and to gather up all fallen berries, and burn everything taken from the bushes, disinfecting any baskets used in collection with a solution of 1 lb. of copper sulphate to 20 gallons of water. American Gooseberry Mildew is a scheduled pest, and the Board of Agriculture should be notified of the outbreak.

MAGNOLIA SOULANGEANA: *W. H. Davies.* The best and easiest method of propagating Magnolia Soulangeana is by layering, which, in this country, is usually done in August or September. The layers take two years to root, and your failure in layering may be due to the fact that they have not been allowed sufficient time to form roots. The branches to be layered should be cleared of leaves, except for a few at the points, and be inserted in the ground 6 inches or so deep, bending the ends of the shoots as nearly at right angles as possible without breaking them. Making a tongue is not necessary when the stem is bent in this manner, which minimises the risk of breaking, the shoots being very brittle. When layered in this country during the months stated above the shoots have the maximum of pliability, being in the condition known as half-ripened. Cuttings of very soft wood inserted in May will root in a close case provided with bottom heat, but the results are none too satisfactory, and this method of propagation is not to be recommended for *M. Soulangeana*, though some other Magnolias root readily from soft cuttings. *M. Soulangeana* is a hybrid between *M. conspicua* (white) and *M. obovata* (purple), and was raised in France. Magnolia Alexandrina, *M. Norbertii*, *M. superba* and *M. rustica flore rubro*, are all hybrids of the same parentage, varying somewhat in the colouring of their flowers and period of blooming.

MANURE FOR VINES: *Vines.* Apply superphosphate of lime to your vines at the rate of 3 oz. per square yard, and if the fruit is not colouring add sulphate of ammonia, 1 oz. to the same space. As potash is difficult to obtain, a liberal amount of wood ash would be beneficial. No ammonia or nitrates should be applied after the berries commence to colour. The variety Madresfield Court is not suitable for growing with White Muscats; Black Alicante and Gros Maroc are the most suitable sorts for the purpose.

NAMES OF PLANTS: *N. M. B.* The flowering plant is Spiraea filipendula (Meadowsweet). We do not undertake to name varieties of Roses. Send them to a local Rose-grower, who can compare them with plants in his nursery. —*C. Wynne.* 1, Lychnis dioica flore pleno; 2, Saponaria ocymoides.—*W. Barnfather.* Glyceria rigida.—*A. Tomlinson.* Cupressus funebris.—*A. M.* 1, Asclepias curassavica; 2, Rubus deliciosus; 3, Polygonum Baldschuanicum; 4, not recognised.

RED SPOTS ON VINE LATERALS: *E. B.* The spots you describe are quite natural and are frequently to be found on vines grown both under glass and out-of-doors. Red spider generally makes its appearance on the underside of the leaves, causing them to turn brown. An excessive use of fire-heat, drought at the roots, and a dry atmosphere are the principal causes of red spider appearing. Mealy bug is one of the very worst pests of the vine, as it not only attacks the leaves, but when allowed to spread unchecked infests the bunches to such an extent as to render them unfit for use. This pest should be dealt with immediately the house is cleared of fruit, again in the winter, and again in the early spring. A sharp watch must be kept for mealy bug after the vines have started into growth and onwards until they are eradicated.

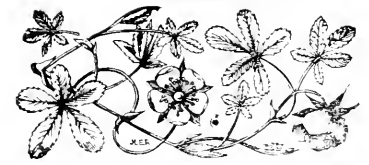
SWEET CORN AND PEAS: *M. M.* Whether or not it will be advisable for you to plant Sweet Corn between the rows of early Peas depends upon circumstances—chiefly the width apart of the rows of Peas, and the situation in which they are growing. Maize is a plant which, coming as it does from countries where the sunshine is much hotter and more continuous in summer than it is here, needs a position where it will be exposed to the maximum of sunshine if it is to develop any heads at all. Therefore, unless the Peas are very wide apart, or are to be cleared almost immediately, they will shade the Maize plants too much.

TENNIS COURT: *C. S.* A tennis court for the single game is 27 feet wide and 78 feet long; for the double game 36 feet wide and 78 feet long. The net is placed exactly across the middle of the shorter dimensions; the posts for supporting the net should be placed 3 feet beyond the sides. The service lines, marked in white lime, form a parallel line each side of the net, 21 feet from it. The net should be 3 feet high in the centre, and 3 feet 6 inches at the posts. The lawn used for the purpose should be perfectly level, and the grass well cut.

WHITE FLY ON CELERY: *M. M.* There are no flies on the leaves you sent us, but we suspect that the damage has been done by one of the species of Aleyrodes, commonly known as "White Fly." The best way of getting rid of the pest is to fumigate the frames in which the Celery is growing with a nicotine vaporising compound.

YEW TREE LOSING ITS LEAVES: *Taxus.* The Yew tree is evidently suffering from drought at the roots, and should be well watered, especially in the spring, just as growth commences. Somewhat the same appearance of the older foliage is caused by impoverishment of the soil due to the proximity of large, deciduous trees. The effect on the Yew is practically the same from either cause. For the present give the roots plenty of water, and in the autumn take out a trench around the tree, keeping well clear of the main roots, and replacing some of the old soil with turfy loam and well-rotted manure in equal parts. The Yew is a gross feeder, and can hardly be overfed in reason.

Communications Received.—I. G.—C. W., W. B.—R. P. B.—L. W. M.—F. W. C.—J. W.—C. D.—W. B. H.



THE
Gardeners' Chronicle
No. 1644.—SATURDAY, JUNE 29, 1918.

CONTENTS.

ILLUSTRATIONS.

SPRAYING, LIFTING, AND STORING OF POTATOS.

ABOUT 200 persons were present at the lecture on Potato growing delivered under the auspices of the Royal Horticultural Society by Mr. W. Cuthbertson, in the Caxton Hall, Westminster, on Wednesday, the 19th inst. The title of the address was "Potato Growing, Spraying, Lifting and Storing." The chair was taken by Sir Charles Bathurst, M.P. He was supported on the platform by Field Marshal Lord Grenfell, President of the R.H.S., Lord Lambourne, Lady Margaret Boscawen, Major Belcher, the Director and Assistant Director of the Royal Botanic Gardens, Kew, Mr. Arthur W. Sutton, Mr. Leonard Sutton, and others.

The chairman, in introducing the lecturer, remarked that Germany had fed her civilian population to the extent of one-third with Potatos. By relying on the Potato that country had been enabled to carry on the war for at least a year longer than she would otherwise have been able to do. Being responsible for the supply and distribution of sugar in this country, and to a large extent for our Allies also, he took a special interest in the success and sufficiency of the Potato crop during the coming season. Owing to the increasing drain upon our sugar reserves, it might become necessary later to reduce the sugar ration of the people. He hoped this might be long postponed. At the same time he advised people to put by some of their sugar ration; while, if rationing had to come, the Potato might relieve the situation in so far as the necessary supply of carbo-hydrates in our food was concerned. It was no exaggeration to say that the bountiful crop of Potatos last year had saved us from famine. It was the Potato, above all other crops, that had enabled this country to bridge over the critical period of scarcity which might have carried us away.

Mr. Cuthbertson, in his opening remarks, stated that he hoped some at least of his audience were enjoying the first fruits of their labours on the strength of the advice he had given last year at the Mansion House. It was astonishing how quickly Potatos came to maturity, or rather a fit condition for eating. The most rapid growth he remembered was one season in South Hampshire, when sprouted sets of an early variety planted on a warm south border on Easter Monday were ready for use on Whit Monday. A writer from New Zealand stated that he had grown Midlothian Early from start to finish in 41 days. Some years ago he arranged with two growers in Penzance for them to grow a crop of Potatos in the open to be ready for the Temple Show in May. Although he had tried the experiment for three years he failed to get a collection ready for that exhibition by about a fortnight. In reference to spraying, he had pointed out that this operation was not a cure, but a preventive. It had been practised by the largest and most skilful growers for many years with splendid results, and he recommended the pamphlet on the subject issued by the Food Production Department.

Potato disease, he stated, first appears, as a rule, on crops growing in low-lying land, and later on those in elevated districts. He had conclusive evidence of this. The Potatos on one farm in the uplands of Lanarkshire, 600 to 800 feet above sea level, had never had disease. In the trials of his own firm there was no trace of disease except at one end of a large plot, where it not had been fixed to prevent the tops being damaged by westerly gales which cut through an opening in the hills. Just as far as the plots were sheltered there was a little disease. An open situation with a free circulation of air was therefore best for the Potato, which was a sun loving plant. He continued as follows:—

Field spraying is done by horse machines, but in gardens and allotments a knapsack sprayer, a hand sprayer, or syringe with an exceedingly fine rose may be used. The most convenient spraying specific is Burgundy mixture. Dry spraying is largely practised in Lincolnshire on thousands of acres with satisfactory results. The work is done when the leaves are damp, the workmen commencing about 3 o'clock in the evening and working all night into the effect of the dew has disappeared next morning. The sulphate of copper is said to adhere most satisfactorily to the Bordeaux when the latter is dusted on dry. It has been stated that dry spraying has not proved satisfactory in America.

When greed in difficulty developed it was possible to detect the "rogues" or plants inclined to some by the difference in the foliage or the colour of the flowers. Such rogues should be marked with a Bamboo cane, for removal, as also should any hearts affected with "Scab" or "Wackles," the latter disease causing the plants to wilt and become yellow and black at the base of the stem. The tubers of such plants should be lifted as soon as possible, and burned, as blackleg disease is carried in the tuber to the next generation. Tubers from plants affected with curl may be used for food, but on no account should they be retained as seed. For lifting Potatos "diggers" are now very common. In the Dunbar district of East Lothian, where the best Potatos in the world are grown, the Potato raising plough is the favourite instrument. A good working plough, properly set in a well-organised field, will make as good a job as a "digger" and lift 4 acres a day with the help of 24 gatherers, 3 or 4 carts, 4 pickers at the pits—in all between 30 and 40 people.

In gardens and allotments there is no better implement for lifting Potatos than the garden fork with three flat tines. After the lifted tubers have lain for an hour or two to dry those for table use should be gathered and pitted at once. Those intended for seed may be allowed to remain for a day or two to "sweat," if the weather is fine and frostless. Potatos for winter and spring use keep best in a good pit, clamp, grave, pie, or hog, names meaning the same thing. In the Lothians the pit is usually about 6 feet wide at the base, and the tubers are piled at an angle of 45° or thereabouts. They are covered with good straw to a depth of 6 inches and afterwards with soil to a depth of 6 to 9 inches. Firmly-packed soil keeps out frost better than loose soil. Danger arises from a frosty wind blowing for days on the side of a pit. In severe frosts more soil should be added on the windward side. Wheat or Barley straw is best for covering the Potatos, Oat straw being less valuable.

Small growers can keep Potatos quite well in a frost proof cellar in layers 18 to 24 inches deep. A few inches of straw should be placed between the walls and tubers, which should be kept quite dark by covering them with sacks. Potatos may also be stored in boxes or barrels in an empty room or attic, but should be well protected against frost. A garden shed is one of the very worst places for storing Potatos, owing to danger from a great and unexpected fall in the temperature.

In making a pit or clamp in small gardens select a site where there is no risk of water accumulating, and do not dig out the soil at the bottom. The base of the clamp should be 3 to 4 feet wide. In the event of straw being unprocurable, hay, Bracken, or old bags may be placed between the Potatos and the soil; even stout brown paper has been used with success. The soil for covering the sides of the clamp should be of a depth of at least 9 inches in exposed places. If rats are troublesome the tops of the vent pipes in the clamp should have a piece of wire netting squeezed into them. In many small gardens the pits are made in the shape of a wigwam or large bee skep.

The tubers should be dry and free from disease when stored; diseased tubers fed to animals should be well boiled. Tubers for seed should be boxed as soon as they are removed from the field, and this is especially necessary in the case of early varieties. It is generally more convenient to put seed of later varieties either by themselves or at the end of a big pit. Early in the New Year the contents of the pit should be turned over and re-pitted. This disturbance checks growth and enables decayed tubers to be removed.

The sprouts on greened tubers always seem to be shorter and stronger than those on sets not greened. Professor Seton, of the University Farm, Leeds, after a series of careful experiments, considered there was an increase of 1 ton 1 cwt. per acre from greened seed prepared in autumn over those prepared in spring. While sunlight causes bitterness, cold causes sweetness. Slight freezing changes some of the starch into sugar, but as the temperature rises the sugar is again re-converted into starch, and the Potato becomes palatable once more. I fear, however, that the greening power is weakened by this chilling process. Severe freezing ruins the Potato entirely. Investigations in the United States have shown that the freezing point of the Potato is between 26° and 28° F. In the United States storage houses are built for Potatos, in some cases to keep out the heat, in others the frost. Some of the American pits or storage cellars, are capable of holding 600 to 1,000 tons of tubers. In the Southern States the temperature is maintained at 34° to 38° F. by the brine system of refrigeration, the temperature being raised or lowered simply by varying the proportions of ice and salt in the tank which feeds the circulating coils.

In regard to grading, Mr. Cuthbertson stated that more attention was paid to this matter in the United States than in this country. In America selected tubers were wrapped in paper and boxed like Oranges.

For exhibition purposes the lecturer recommended that the Potato should be grown in specially prepared soil. The land should be carefully dug and broken down fine, leaf mould or sifted manure added and a dressing of artificial manure given in the drills at planting time, with, if available, some dry wood ash, all being stirred among the soil with a fork. Shapely 3 or 4 oz. tubers with two strong sprouts should be used as sets. The crop should be lifted carefully the day before the show, and the tubers

handled ordinary. The tubers for exhibition should be placed in a shallow box and covered with a sack to exclude the light, and they should be kept in the dark until they are on the exhibition table. The tubers should be carefully washed and all soil removed with a fine brush or cloth, and should be even in size, with the shallowest eyes. The "rose" ends with the eyes should face the judges, and the tubers should be kept as level as possible. Rubbing in transit may be prevented by wrapping each tuber *Journ. Ch. Acric.* on April 27, 1918, p. 173.

The best weight for exhibition was about 10½ ozs., judging by a dish of a flattish round variety he had once seen in a collection of 700 dishes.

In his concluding remarks Mr. Cuthbertson referred to the article on "The Chemical Life-History of the Potato" published in the *Gardeners' Chronicle* a few weeks ago.

Field-Marshal Lord Grenfell, who occupied the chair for the latter portion of the lecture, moved a cordial vote of thanks to Mr. Cuthbertson for his lecture. This was seconded by Mr. A. W. Sutton, who paid a tribute to the lecturer as one of his keenest competitors in the trade. He referred to the varieties of Potatos that had gone out of cultivation during the past 10 or 20 years. Only a few notable exceptions of those days were to be found in the lists of to-day. This showed the extreme importance of raising new varieties, as each year demonstrated the fact that the older sorts were becoming weaker in constitution and would eventually disappear, like their predecessors. The development of new varieties can only be secured at great expense, and he had paid as much as £750 to a Scottish specialist for a new variety the tubers of which were no larger than Hazel-nuts. It was impossible to say how many of such "seed" would turn out to be worth keeping. He mentioned this fact to show the enormous expense raisers of new seed Potatos incurred, and he hoped the Government would not impose any restrictions in regard to prices of seed Potatos that would be likely to interfere with this important work. His firm had undertaken the work of hybridising seed Potatos with the original Solanum Maglia, and the work had been going on for years, in the hope that something valuable would one day be obtained. The seed-grower should be encouraged to carry on this kind of work with Potatos, which was much more costly now than in former years.

ORCHID NOTES AND GLEANINGS.

ODONTOGLOSSUM HAMLET.

THE first flower of a hybrid between Odontoglossum Marietta var. Black Prince (Lambeauianum × Rolfeae) and O. crispum, named O. Hamlet (see fig. 112), is sent by Pantia Ralli, Esq., Ashtead Park, Surrey (Orchid grower, Mr. W. H. White). The flower is of good size, form and colour, the reverse side of the bloom being coloured almost as much as the face. The ground colour is white; the sepals are heavily blotched with confluent bands of purplish-red, the petals having similar markings, and both sepals and petals have white margins and tips. The lip is crimped and fringed, the centre being coloured dark purplish-red. The crest is yellow, with purple markings, which also appear on the upper side of the column. The influence of O. Harryanum, which was a primary and also a secondary ancestor, is shown in the crest and column, but, as with other complicated crosses, the identity of the less decided agents are difficult to detect. In this, as in most other hybrid Odontoglossums, the tendency is to enlarge the size and lessen the number of the coloured markings on the segments.

FIG. 112.—ODONTOGLOSSUM HAMLET (NAT. SIZE).

LAELIO CATTLEYA APOLLO.

A FINE flower of this pretty Laelio-Cattleya is sent by C. J. Lucas, Esq., Wainham Court, Horsham, who raised it between Cattleya Schroderae and Laelio-Cattleya warnhamensis (L. cinnabarina × C. Fraineri). The shape and size of the flower is derived from C. Schroderae, and the reddish-orange of L. cinnabarina, which usually asserts itself in the progeny in which it has taken a part, imparts a delicate reddish-apricot tint to the flower; the sepals and petals have a delicate veining of light rose colour. The well-rounded lip has a darker yellow disc, the front having a slight rose tint and veining as on the petals.

TREES AND SHRUBS.

THE CAMPERDOWN ELM.

FOR several years past I have noted a weeping Elm in several gardens in a western suburb of London, and also in Berkshire, although I have failed to locate the source from which the trees were supplied. It forms a narrow, umbrella-headed tree, with the compactness of the Kilmarnock Weeping Willow. The tree is Ulmus montana Camperdownii, and may be easily distinguished from U. m. pendula, of London, by its very broad leaves, lying above and hiding the branches, whereas those of U. m. pendula are narrower, and disposed beneath the branches, so that the latter are exposed all through the season while the tree is in full leaf. The Camperdown Elm takes up much less space than the older weeping form, and is, therefore, suitable for planting in small gardens and on lawns of limited dimensions. I have seen trees planted on either side of a narrow gateway, meeting above, and just pruned at the ends of the branches to prevent their blocking the way to the front door of the villa. The variety originated at Camperdown House, Dundee, where it was of some age 40 years ago, and prostrate on the ground amongst other Elms. I first saw the variety in a Forfarshire nursery in the nineties of last century, under the name of Lord Camperdown's Elm. *J. F.*

THE ALPINE GARDEN.

SAXIFRAGA COCHLEARIS.

THE two forms of Saxifraga cochlearis named major and minor are not new, but are too good to be neglected, and where the Silver Saxifragas are held in regard these varieties should find a place. In Mr. Reginald Farrer's book, *The Rock Garden* ("Present Day Gardening" series), there is a reference to S. cochlearis which should whet the desire of all garden lovers to possess this, one of the best of all the Saxifragas. All three forms are beautiful and all possess much the same character, with small rosettes of a pale blue-grey, and the spoon-shaped leaves all daintily notched and dusted with silver. Above the little silvery mound there rise lovely red-tinted stems bearing wonderfully big flowers of glistening, snowy purity. The type, S. cochlearis, is a gem. No less lovely, and perhaps finer, are the varieties major and minor. They share all the graces of the typical species, but major has bigger rosettes and leaves and larger flowers, while minor has a winsome charm which endears it to the true Alpine lover. Mr. Farrer tells us that it likes sun or shade, and that it grows well in calcareous or sandstone media. I grow S. cochlearis and its forms best in a moraine in full sun, with a modicum of lime mingled with the whinstone chips. This, I consider, increases the whiteness of the markings. *S. Arnott.*

SILENE VALLESIA.

THE free flowering Silene vallesia (see fig. 113) is very attractive on the rockery of the Botanic Garden, Cambridge. The species is not, I believe, common in gardens, but it is very distinct, and though not brightly coloured, is, in my opinion, one of the most desirable of all the Catchflies. It is robust, and spreads freely, but grows only about 5 inches high. The plant is pubescent and very glandular, so that the fingers are at once sticky if it is handled. The leaves are lanceolate and sharp-pointed, the stem leaves sessile, but the root leaves are narrowed into a petiole. The flowers are rather peculiarly coloured; the large tubular calyx, bulging above like a vase, is whitish, ribbed and veined with red; the corolla, with blind segments, their tips very soon incurved, is of lilac-rose colour, while below the colour is of brownish-red or brick-red. In Switzerland the plant is rare, growing only on some of the Southern Alps in Valois, on the Italian frontier. It is also native on the Alps of Savoy and Dauphiné, in Italy, in Bosnia and Montenegro. It is said to grow in stony places on silicious rocks, and is very local, but from the freedom of its growth here, on soil that must contain lime, I should expect that in cultivation it would grow in almost any kind of soil. The photograph from which the illustration is reproduced was taken by my foreman, Mr. F. G. Preston. *R. Irwin Lynch.*

The Week's Work.

THE KITCHEN GARDEN.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey

ONIONS.—Onions are growing freely, especially where the ground has been kept free from weeds, and frequently stirred. Continue to give occasional light dressings of old soot, which will improve the growth and otherwise help to ward off an attack of fly. This crop pays for a little extra attention, and if the bed can be given good waterings in the evening, or only syringed after a hot day, this treatment will increase the size of the bulbs, and generally improve the appearance of the bed.

BEET.—Thin the plants from sowings made in May to 6 inches apart, to obtain medium-sized roots. The latest sowing should be made by the end of this month, choosing a strong-growing variety. Keep the ground stirred between the rows to encourage free growth.

GENERAL WORK.—Pinch off the tops of Broad Beans as soon as they come into flower. Endeavour to keep the ground clean by constant hoeing, as it is useless to hoe up such weeds as Groundsel and Shepherd's Purse after they have been allowed to flower. They should be pulled up and burnt to prevent their seeding. Successional crops of Lettuce should be transplanted as soon as the young plants are large enough to handle, and if the weather should be dry, these and earlier crops should be well watered. The latest sowing of White Cos may now be made, and also a further sowing of Endive. Radishes and Mustard and Cress should be sown thinly broadcast in a fairly rich soil, choosing a border on the north side of a wall. Keep the soil moist, sowing fresh seed every ten days. Another small sowing of Dwarf Beans may be relied upon to provide good pods late in the autumn, provided there are no early frosts. Hasten with the transplanting of all spring-sown plants and all kinds of winter greens. Mulch the soil between Vegetable Marrows to retain the ground moisture, and also to economise labour. Heavy soils have cracked badly; fine material distributed among the rows of Carrots, Onions, Beet and other crops after the surface has been loosened, will prevent the ground from becoming hard, while much heavier mulching material may be freely used for the coarser-topped vegetables.

FRUITS UNDER GLASS.

By W. J. GUISE, Gardener to MRS. DEMPSTER, Keele Hall, Newcastle, Staffordshire.

POT FRUIT TREES.—Care should be taken that pot fruit trees from which the fruit has been gathered do not suffer for lack of moisture at the roots. Place the trees out of doors directly they have been cleared of their crops, plunging the pots up to the rims in ashes. Cherries should have a position out of the full glare of the midday sun. These will be followed by Plums, Peaches, Nectarines, and Apricots. The free admission of sunshine and air, daily attention to watering and syringing, with occasional light dustings of some concentrated manure, are necessary at the trees are to be in good condition for fruiting next year.

LATE VINES.—Let the bunches of late Grapes be severely thinned, and see that the crop left is not too heavy. Where the berries are swelling, maintain a moist atmosphere, and give every possible attention to the roots. If moisture is necessary, give strong manure water. Lateral growths should be kept pinched and gradually tied to the trellis.

MULCHING FRUIT BORDERS.—From now onwards the borders will require watering more frequently. Moisture will be conserved considerably if the borders are given a liberal surface dressing of well-decayed manure. The borders must be examined at regular intervals, and water given liberally when it is necessary. As the manurial properties of the mulchings become washed out, frequent applications of liquid manure should be given, especially to trees carrying heavy crops of fruit.

THE ORCHID HOUSES.

By J. COLLIER, Gardener to SIR JEREMIAH COLMAN, Bart., Gatton Park, Reigate.

CYPRIPEDIUM. Many species and hybrids of the strong-growing, warmth-loving Cypripediums, such as C. Rothschildianum, C. grande, C. Stonei and others of this section, after passing out of bloom, should be subjected to a short period of rest. After resting the plants should receive attention at the roots. Any that are pot bound may be shifted into larger pots. Remove, with a pointed stick, as much of the old compost as possible, without damaging the roots. Ordinary flower pots form the most suitable receptacles, filled to about one-half their depth with clean crocks. Pot firmly, keeping the base of the plant just below the rim of the pot. Other species that should be given attention in this respect, as soon as growth recommences, are C. callosum and its variety Sanderæ, C. Lawrenceanum with its varieties Hackbridgense and Hyeanum, C. Curtisii, and C. Maudiæ. These Orchids do not require such a retentive rooting medium as those that produce their flowers during the winter, nor is it needed in such quantity. The compost may consist of good fibrous peat, or Osmunda fibre two parts and one part Sphagnum moss. Both materials should be chopped up moderately short, adding a sprinkling of crushed crocks, the whole well mixed together. Pot each plant with moderate firmness. For a few weeks after repotting keep the surface of the compost just moist, but when the plants are re-established they may be afforded liberal supplies of moisture at the roots. At all times keep the plants on the shady side of the house. During the growing season, whenever the weather is bright and warm, these Cypripediums delight in having their foliage sprayed over with clear, soft, tepid water; but care should be taken with regard to such species as C. Stonei, C. Rothschildianum, C. grande and others of that section, that no water remains low down in the centre of the growths or axils of the leaves, as they are very liable to decay from this cause. If the plants have not been disturbed for a few years there will be a number of old growths that have flowered. One behind the lead or growing point is ample, and the others may be removed. If it is desired to increase the stock, the back growths, if placed in a warm, moist house or propagating frame, will often produce new shoots, when they may be potted to make fresh specimens. A better plan is to sever the rhizomes at intervals, a few weeks before it is intended to repot the plants. New breaks usually appear, and are sufficiently advanced for repotting at the same time as the front portion of the plant. Few Cypripediums prove more amenable to this form of propagation than the popular C. Maudiæ. Those of the leaf-growing Cypripediums, such as C. bellatulum and its variety, C. b. album, C. niveum, C. concolor and other hybrids that have no stalk, flowered, should also be repotted or resurfaced as is found necessary. These plants are best grown in pots or fairly deep pans provided with suitable materials for drainage purposes. A suitable compost for these Orchids consists of two parts good fibrous loam, broken up in lumps about the size of Walnuts, and one part peat, mixed freely with small pieces of mortar rubble. They are best grown in a position near the roof glass in the Cattleya or intermediate house.

THE HARDY FRUIT GARDEN.

By JAS. HUDSON, Head Gardener at Gunnersbury House, Acton, W.

TRAINING AND PRUNING. Trees that were cut back as stocks and re-grafted with other varieties will need attention. In most instances it will be possible to remove the clay entirely. If this be still adhering firmly, moisten it, so as to get it away without injury to the grafts. Secure the young shoots upon bush or pyramid trees at once to small sticks. On walls these young growths may be secured better by string than by nailing; a few nails may be driven in and the string fixed to the nails. In the case of wall trees aim at keeping the leading shoot growing freely, and pinch the laterals. For bush and pyramid trees this is not so important an item to consider. See that no shoots develop from below the new graft so as to rob it of the sap. The shoots of newly-trained trees on walls should be secured either by tying or nailing, and the growths so trained as to secure a well-balanced tree. A free use can be made of the thumb and finger for stopping the growths. During hot weather keep all young trees well syringed, and also watered at the roots. Keep a sharp look-out for insect pests; if red spider threatens to be the troublesome it must be checked in good time. Secure the leading shoots by all means, but some light, twiggy growth, such as the prunings from Nut trees, may be used to secure the lateral shoots. If the sides be shrivelled, wired, tying will be expeditious. In the case of Peaches and Nectarines, stop the shoots not needed to furnish bare spaces. Some of the short, stubby growths may be retained as spurs. The breast-wood of Pears may this season be growing too freely with a shortage of fruit. It is rather soon yet to summer prune, but a check may be given by twisting or bending the shoot.

PLANTS UNDER GLASS.

By E. HARRISS, Gardener to Lady WANTAGE, Lockinge Park, Berkshire.

STREPTOSOLEN JAMESONII.—Young plants of Streptosolen Jamesonii sometimes fail to flower through the growth not being sufficiently matured. Plants which have been propagated from cuttings should be kept growing during the next few weeks in a light, airy structure. Pot them when ready in rich, open compost. The strongest growths must be stopped occasionally to keep the plants shapely. Towards the end of summer move the plants out of doors in a sheltered situation to ripen their growth.

HUMEA ELEGANS.—These plants are developing their inflorescences, and require more liberal treatment in regard to watering and feeding. Diluted farmyard drainings and soot water may be given alternately. Admit plenty of air on all favourable occasions, and shade them only from bright sun until the flowers are fully developed, when they may be shaded during the greater part of the day. When the plants are in flower one or two of the best specimens should be selected for seeding. These should be placed by themselves until the seed is ripe. The heads should then be cut down and laid on sheets of paper. Young plants which have been raised from seed should be potted singly into 2½ inch pots. Plunge the pots in boxes of Coconut fibre and place them on a shelf in a cool house. Do not expose them to cold draughts, and shade them from the direct rays of the sun.

THE FLOWER GARDEN.

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

AMARYLLIS BELLADONNA. Where Belladonna Lilies have grown into thick masses, and as soon as the foliage is decayed, they should be lifted, the flowering bulbs separated from the offsets, and either replanted at once or retained till August or September. The plants are extremely erratic here, and sometimes do not make foliage until the spring, which spoils them for flowering. When replanting give each a space of at least 12 inches and set them about 4 inches in depth in a compost consisting of turf and leaf mould to start them in. In other years a dressing of manure during winter will suffice the plants for that season.

THE ROCKERY.—Growth of the more luxuriant plants will now need restraining, and this is best effected by pulling portions away by hand. The early flowering plants will need their flower stems removed, and those that have become too thick to flower freely may either be transplanted after division, or parts cut out of them and the holes filled with compost. It may be necessary to surface dress ground containing low-growing plants with very fine compost as an aid to free rooting.

EDITORIAL NOTICE.

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

APPOINTMENTS FOR JULY.

TUESDAY, JULY 2—
Roy. Hort. Soc. Coms. meet., Nat. Sweet Pea Soc. Ex., and Scot. Hort. Assoc. meet. at the Drill Hall, Buckingham Gate, Westminster.
TUESDAY, JULY 16—
Roy. Hort. Soc. Coms. meet. and Nat. Carnation Soc. Annual Ex., in the Drill Hall, Westminster.
THURSDAY, JULY 18—
Croydon Hort. Soc. Vegetable Ex. in Park Hill Recreation Ground, Croydon.
TUESDAY, JULY 23—
Southampton Royal Hort. Soc. show and Southern Counties Carnation Soc. Ann. Ex. at Southampton (2 days).
TUESDAY, JULY 30—
Roy. Hort. Soc. Coms. meet.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 61°.

ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, *Thursday*, June 27, 10 a.m.: Bar. 30.1. Temp. 63.0°. Weather—Sunny.

Rothamsted in 1918.

In war, as in peace, Rothamsted continues its patient investigation of problems connected with soils and manures in their relation with gardening and farming. Most of our readers are aware that this experimental station was founded by John Bennet Lawes, who began manurial experiments, first with plants in pots, and then in the field, in the year 1834. More systematic field experiments were begun in 1843, and, in the Broadbalk Fields, at least, these trials have been continued uninterruptedly up till now—a period of 75 successive years.

On the 18th inst., by the invitation of the Director, Dr. E. J. Russell, we were afforded opportunity of inspecting the work of the station and seeing the new laboratory which has been erected and equipped at a cost of about £26,000, to commemorate the centenary of the founders, Lawes and Gilbert. The new building is an imposing edifice, built of grey-red bricks. It stands on a slight eminence, and is a conspicuous feature from the trains running in and out of Harpenden Station, on the London side. The equipment consists of up-to-date chemical apparatus and physical appliances, and the building contains several specialised laboratories, one, named the James Mason laboratory, being devoted chiefly to researches in bacteriology. There is a special soil laboratory, and another for the study of entomology and protozoology, so far as these branches of science affect agricultural and horticultural problems.

Dr. E. J. Russell conducted us over the laboratories and the plots, and explained the aims and objects of the experiments that were being undertaken in the various departments.

At the present time the principal problems under consideration are the production of nitrogenous plant-foods, the better conservation and use of farmyard manure, the inoculation of the soil by beneficent bacteria, and the elimination or control of injurious insect pests, such as wireworms and cockchafers.

Owing to the great demand for nitrates by the Ministry of Munitions, the supply of this valuable plant food available for growers has become restricted. Experiments are being conducted with a view to increasing the nitrogen supply from straw. In the laboratory experiments the straw is chemically treated with a view not only to increasing the supplies of nitrogen, but also to prevent the waste of that material in ordinary stacks of farmyard manure.

Some of the more interesting experiments were those connected with the destruction of soil pests. The toxic effects of various substances are being investigated, and it has been found that when used alone, some are practically harmless to the pests, but when used in combination, they become highly effective. All this work, however, is at present in the initial stage, and it may be a considerable time before anything like a perfect soil insecticide that will perform its intended functions without injuring the soil or harming vegetable or animal life, is produced.

The famous Wheat experiments in the Broadbalk Field were examined with interest, this being the 75th successive year that the crops had been grown on precisely the same area, and mostly in precisely the same way. As might be expected, farmyard manure, and complete chemical manures, have always given the best results, while the incomplete fertilisers give poor results. If one thing more than another is proved by the Broadbalk Field experiments, it is that the same crop may be grown successfully on the same soil year after year. When Wheat has been grown continuously on the same plot for 75 years, and still yields practically the same quantity of straw and grain, without any signs of "sickness," it becomes necessary to modify our ideas on the rotation theory.

As with Wheat, so with Mangolds: farmyard manure and complete artificials naturally gave superior results, the former especially, as the soil is of a dryish, strong character.

The latest addition to the experimental work is electric culture. A small electrical installation has been fixed up, and the current is transmitted over the field from overhead wires. The results seem to be negative, so far at least as the eye could distinguish.

The question of soil inoculation by means of bacteria is also receiving attention, and in due course valuable discoveries may be looked for in this direction.

Under Dr. Russell's energetic and sure guidance this famous station has extended to a yet larger sphere of usefulness, and British agriculture and horticulture have reason to be proud of Rothamsted, not only for the historical part it has played in the peaceful past, but also for the strenuous part it is playing now in helping to solve problems arising out of the war.

BOTANICAL MAGAZINE.—The following plants are described and illustrated in Vol. XIV. of the *Botanical Magazine*, comprising the issues for April, May and June, 1918:—

PRIMULA ANISODORA, tab. 8,752.—A new Chinese species, discovered by Mr. GEORGE FORREST in Yunnan, at an altitude of about 11,000 feet above sea-level. The deep-red flowers are produced on a tall scape, which arises from the ovate, oblong, spathulate leaves, 6 to 8 inches long.

ODONTOCHILUS LANCEOLATUS, tab. 8,753.—This terrestrial Orchid, a native of the eastern Himalayas, bears a spike of greenish-yellow flowers with a prominent yellow lip. The stem is rosy-coloured, and bears handsome dark-green leaves, traversed with golden veins.

ZANTHOXYLUM PLANISPINUM, tab. 8,754.—A Rutaceous shrub, with spiny stem and trifoliate foliage; it is a native of Japan. The plant forms a bush about 6 feet high, and is very ornamental in autumn, when bearing a profusion of small red berries.

ERLANGEA AGGREGATA, tab. 8,755.—This plant is a native of Angola. It bears dense flower-heads of a bright mauve colour. The plant is likely to prove useful in gardens, as it flowers in mid-winter, and would make a suitable greenhouse subject.

MONADENIUM ERUBESCENS, tab. 8,756. — A Euphorbiaceous plant, with tuberous rootstock, from which arises the succulent stems, which bear at their apices inflorescences with cupular or bell-shaped bract-involucres having the appearance of stippling, like the Henbane.

MALUS SARGENTII, tab. 8,757.—This new Crab was discovered by Professor SARGENT in Japan, and is a close ally of M. Toringo. It makes an attractive garden tree, both when in flower and when laden with its bright red fruits.

ANGRAECUM GRACILIPES, tab. 8,758.—This is the plant described and illustrated in *Gard. Chron.* under the name of A. recurvum in the issue for November 29, 1913. The flowers are white, and have a broad, wedge-shaped lip.

RHODODENDRON SIDEROPHYLLUM, tab. 8,759.—One of the numerous new Rhododendrons recently introduced from China, and an ally of R. Davidsoniana. The flowers are a soft, lavender pink, and relatively large compared with the leaves, which are dull yellow on the under-side.

HOWEA BELMOREANA, tab. 8,760.—This Palm is well known in gardens in this country. It was described and illustrated in *Gard. Chron.*, July 19, 1890.

BULBOPHYLLUM SOCIALE, tab. 8,761.—This attractive Orchid bears a large, broad leaf, and a spike of orange flowers, which are striped with red and have a rosy-purple lip.

PRIMULA SYLVICOLA, tab. 8,762.—A Chinese species, bearing a tall inflorescence, with flowers in whorls, of a rose-purple colour. The species is closely allied to P. sino-molle.

MELICYTUS RAMIFLORUS, tab. 8,763.—A shrubby species, belonging to the Nat. Ord. Violaceae, and a native of New Zealand. The fruits are the most attractive feature, being about the size of Peas, and of a lavender shade. The female flowers are greenish, the male blossoms bright yellow.

WORSHIPFUL COMPANY OF GARDENERS.—The term of office of the Master of the Worshipful Company of Gardeners, Lieut.-Colonel JOSEPH FRANCIS, terminated on June 14, and at the installation Court held on that day the following resolution was unanimously passed:—"That the hearty congratulations and best wishes of the members of this Company be conveyed to their Past Master, Lieut.-Colonel JOSEPH FRANCIS, O.B.E., J.P.; that a Past Master's medal be presented to him, and that in recognition of his two years' service such medal be struck in gold." The Company presented Queen MARY, at Buckingham Palace, on the 22nd inst., with a bouquet

of Hermione Carnations, in commemoration of the seventh anniversary of the Coronation. Sir CHARLES WAKEFIELD, the new Master in succession to Lieut.-Colonel FRANCIS, made the presentation.

THE LATE MR. R. HOOPER PEARSON.—We are asked by Mrs and Miss ETHEL PEARSON to express their gratitude to the numerous friends who have sent letters of sympathy, and who contributed wreaths, on the occasion of Mr. PEARSON'S death. They much regret being unable at present to reply personally, but are none the less grateful for the kindness which has been shown to them.

—— Mr. CUTHBERTSON, in his lecture on Potatos at the Caxton Hall (see p. 261), made a feeling reference to the late Mr. HOOPER PEARSON. Proceeding to make a quotation from a recent leading article in our columns, he said "no one interested in horticulture could to-day mention the *Gardeners' Chronicle* without thinking of the very serious loss horticulture had sustained by the death last week of the Managing Editor of the paper. Mr. PEARSON was the personal friend of many present that afternoon, and his worth, ability and devotion to horticulture were known to and appreciated by a very wide circle at home and abroad, every member of which was a mourner that day."

BRITISH GARDENERS IN WAR-TIME.—Mr. W. F. GILES, manager of the seed production department of Messrs. SUTTON AND SONS, Reading, contributes in the form of a letter to the *Market Growers' Journal*, of America, an interesting article on "How British Gardeners are Carrying on." In the course of his letter Mr. GILES describes the steps which were taken at the outbreak of war by small cultivators to increase food production, and refers to the wonderful increase in allotments, and the no less remarkable increase in the area of garden ground under food crops. He notes that so far this large increase in production has had no adverse effect on the professional market gardener, but reserves his opinion as to whether, if the area now under cultivation is maintained, such an effect may become manifest after the war is over.

THE SOFT FRUIT CROP.—Estimates by the Board of Agriculture, based on careful inspection of the crops in the chief producing areas, indicate that the yields of soft fruits are considerably below the average. The causes of this unfortunate state of affairs are numerous. In the first place, the heavy crops of previous years are followed, as is always the case, by a lean year. In the second place, scarcity of labour has undoubtedly lowered the standard of cultivation, although it has, unfortunately, by no means reduced the cost. In the third place the area under such soft fruit as Strawberries has suffered a decrease owing partly to the pressure put on growers to increase their acreage of cereals and Potatos, and partly to the mistaken attitude of some county authorities in discouraging planting on the ground that fruit is a luxury. As we have pointed out more than once, what was a luxury in peace time has become a necessity now. In the fourth place, the spell of misty weather at the time of the setting of the crop prevented the distribution of pollen by wind or insect, and led to the incomplete pollination of the flowers. As a consequence many fruits of the Gooseberry, for instance though they began to swell, dropped before they were more than one-quarter size. Another contributory cause was perhaps neglect of spraying owing to labour shortage, resulting in the prevalence of insect and other pests. It is clear that every step that is possible of execution will have to be taken to encourage planting and cultivation of soft fruits.

FLOWER FAIR IN TRAFALGAR SQUARE.—The floral exhibition in Trafalgar Square held during the past week on behalf of the British Ambulances being used on the French Front has proved a great success. The exhibits were arranged in a very similar manner to those at the R.H.S. fortnightly shows—indeed, nearly all the firms represented are amongst the most frequent exhibitors at the Drill Hall. Water-Lilies from the R.H.S. Gardens, Wisley, were arranged in the water basins around the fountains. Considerable sums were raised by the British Carnation Society, the National Sweet Pea Society, and the National Rose Society, whose members give flowers for sale. Many of the nursery firms contributed 20 per cent. of the value of the goods sold, and in addition the gate-money helped to swell the total sum gained. Some firms gave the entire proceeds of their exhibits, which were sold at fancy prices. Messrs SUTTON AND SONS' magnificent collection of vegetables was disposed of by voluntary saleswomen, and it was entirely replenished on the Monday, the fresh consignment being again offered, and equally readily disposed of. In addition to this the firm contributed large numbers of cut blooms, which were sold at stalls at high prices. Messrs. ED. WEBB AND SON'S exhibits of fruit and vegetables were also sold for the benefit of the fund. Mention must be made of the gifts of Orchids, especially those of Messrs. SANDERS and CHARLESWORTH AND CO. An Odontoglossum hybrid was sold by Lady SUTTY for the sum of £100. Four thousand Orchids from Haywards Heath realised a shilling each and over, while 24 plants of Miltonia vexillaria sold for sums of from 5 to 8 guineas. Princess LOUISE, Duchess of Argyll, attended the Fair on the closing day, Wednesday, the 26th inst., when Mrs. LLOYD GEORGE presided at the stall of Roses contributed by Mr. ELISHA J. HICKS. At the auctions small bouquets of flowers fetched big prices; one of the most successful was conducted by Mr. ARTHUR COKE at Lady GARVAGH'S stall of blooms contributed by Queen ALEXANDRA. The Prime Minister arrived shortly before 4 o'clock, and the cheering was loud as he made his way to Mrs. LLOYD GEORGE'S stall. There he put his autograph on a card which was attached to a basket of Orchids, and sold for seven guineas. His signature on a mother-of-pearl shell also brought a substantial sum. It is expected that the total proceeds will amount to something like £10,000.

STRAWBERRIES.—The Strawberry crop for the remainder of the present season having been commandeered by the Government for the manufacture of jam for the troops, the public has been unable recently to purchase Strawberries at the shops. A concession has been made in releasing the Saturday consignments, for it was found that the jam makers were unable to deal with the fruits at the week-end. They were ordered to be sold to the public at a price not exceeding 9d. per lb. retail. The

FIG. 115.—SILENE ALTISSIMA FLOWERS PALE COLOUR, THE CALYX WHITISH, RIBBED AND VEINED WITH RED.

(See p. 266.)

NATIONAL SWEET PEA SOCIETY. The National Sweet Pea Society has arranged a special exhibition of Sweet Peas in conjunction with the R.H.S. meeting on Tuesday next, July 2. No money prizes will be given, but medals will be awarded to groups, and certificates to novelties.

ALLOTMENT STATISTICS.—Recently the Food Production Department asked the Local Authorities of England and Wales to make a return showing the total number of allotments prior to and since the outbreak of war. From the actual limited supply available to the public in London on the 22nd inst. was eagerly bought, in many cases at prices far exceeding the prescribed limit. Large quantities were also sold wholesale at Covent Garden Market to jam makers at the Government price of £40 a ton. It was stated that up to noon on Saturday, the 22nd inst., about 50,000 baskets of Strawberries had arrived at the market on that day.

figures received, and other inquiries of the Department concerning the increase of privately owned allotments, including those provided by railway companies), it is estimated that there are now in this country upwards of 1,400,000 allotments. The pre-war home was about 570,000 allotments; the number laid out since the commencement of war is approximately 830,000. Returns obtained from 69 of the 81 County Boroughs in England and Wales show that there were under 59,000 pre war allotments in these areas; whereas at present there are over 222,000 allotments, representing an increase of about 270 per cent. One hundred and thirty-two Town Councils reported just under 42,000 pre war allotments; now there are nearly 97,000 allotments in their areas—an increase of upwards of 130 per cent. In 253 Urban Districts there were 42,000 pre-war allotments, as compared with over 100,000 allotments now in cultivation—the latter figure representing an increase of about 140 per cent. The grand total of allotments in England and Wales at present covers an area of about 200,000 acres. Taking this figure—and estimating that 50 per cent. of each allotment is planted with Potatos (a conservative estimate)—there are 100,000 acres of Potatos on allotments. If those produce an average of 7 tons per acre (a moderate assumption for garden and allotment Potato crops), this means that the allotment holders of England and Wales will grow this year 700,000 tons of the most essential war-time crop practically on the spot where the produce is to be consumed.

SEED POTATOS FROM DEVONSHIRE.—On some of the high land in Devonshire, where the rainfall is rather high, Potatos are grown which give great promise of being first-rate for seed purposes. A trial is being carried out at the R.H.S. Gardens, Wisley, with Devonshire tubers against Scotch, Irish, and Lincolnshire ones. The results will be specially interesting to our Scotch friends, who have deservedly such a good reputation for seed Potatos.

SCARCITY OF CHERRIES.—The prices being paid for Cherry orchards this year are indicative of the scarcity of the fruits. At Sittingbourne, in a few favoured orchards, the fruits realised the unprecedented price of 50s. per bushel on the tree. The high prices are due to the shortage of all kinds of fruit, and the utilisation of Gooseberries, Strawberries and other soft fruits by the Government for the manufacture of jam for the troops. That the crop is much below the average is seen in the decreased value of Cherry orchards in Kent. An orchard of 20 acres at Barming, near Maidstone, sold for £240, against £715 last year; 28 acres at West Malling realised £150, against £660; 7 acres at East Malling and 4½ acres at Ditton sold for £2 and £3 respectively, against £125 and £166.

WAR ITEMS. We regret to announce that Captain E. L. BENBOW, M.C., attached R.A.F. (lieutenant R.F.A.), was killed in action on May 30. He was the son of Mr. J. BENBOW, of La Mortola Gardens, Ventimiglia, Italy. He went to France on February 2, 1915, and served with his battery for about 12 months. He afterwards served as observer with the Royal Flying Corps for eight months, then qualifying as a pilot; he was decorated by his Majesty the KING with the M.C. at the Investiture held in Hyde Park on June 2, 1917.

Information of the death of Mr. GORDON FARRIES, who has been missing for some time in France, has been received by his father, ex-Baillie FARRIES, Dumfries, his body having been found on the place where he fell, which was afterwards re-taken by the Allied troops. Mr. FARRIES served his apprenticeship with the firm of Messrs. JAMES SERVICE AND SONS, nurserymen and seedsmen, Maxwelltown, Dumfries. He afterwards entered the employment of Messrs. JAMES VEITCH AND SONS. Later he joined the garden staff at Kew, where he was employed at the time of enlistment.

HOME CORRESPONDENCE.

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

LONDON TREES.—Mr. Webster's interesting article on p. 251 deals chiefly with deciduous trees; but I can never understand why Quercus Ilex, the Evergreen Oak, is not sometimes planted instead of the eternal Plane. As the tree appears to grow well in the gardens of Buckingham Palace, it should do so elsewhere in London. Once it has become well established, it makes rapid growth, while on the ground of beauty it needs no justification; and it would give a sense of warmth to our winter streets. For example, how much more attractive the Mall would look in winter—particularly, I suppose, from the windows of Buckingham Palace—had Ilex been planted there instead of Plane! It would be a good step even now to interplant these Planes with Ilex, the Planes to be cut out when the others grew up. *Ashgn Trevor-Battye, Ashford Chace, Hampshire.*

—— Mr. Webster strikes a true note when he says that the "limit of numbers has long ago been reached," in planting Platanus acerifolia (London Plane) in the London area. In recent years I have noted with regret the removal of such beautiful and interesting trees as Robinia Pseudacacia Decaisneana, Ulmus stricta (Cornish Elm), and U. s. Wheatleyi (Guernsey or Jersey Elm), to make room for the London Plane, already only too plentiful in the district. I might add U. minor (East Anglian or Lock Elm), a small-leaved species of closely and finely branching habit that casts only a moderate shade. All the trees he mentions succeed well in the western suburbs, including a fine tree of Koelreuteria paniculata, which fruited as freely in 1911 as it does at Paris. This also applies to a tree at Kensington. I presume the cut-leaved Pyrus would refer to P. pinnatifida, which is not so common as it might be. The berries are larger, deeper red or crimson than those of the Mountain Ash, and the birds do not, as a rule, eat them so rapidly as those of the Mountain Ash. The London Plane does not thrive in Edinburgh or Glasgow, but I attribute that to the lower mean temperature rather than to the soil, though both causes may account for the slow growth. *J. F.*

CROPS AND STOCK ON THE HOME FARM.

HORSE BREEDING.

Now that horses are so scarce and dear, farmers should devote more attention to breeding them. The type of agricultural horse varies in counties and localities, and certain breeds are found best for particular soils, whether heavy or light. For the latter a lighter type of horse than the ordinary Shire is the most useful, especially where the animal is not required for heavy road work. On stiff, heavy land a thick-set, short-legged type of horse does the work more easily than a heavy animal, which is more favoured for road or town work. It is not so heavy in its tread on the land, which in some fields is an important point to observe. The Suffolk horse, commonly known as Suffolk "Punch," is an excellent type of general farm horse, being especially adapted for heavy land, as it has small feet and legs, as compared with the body. Shire horses will, no doubt, make more money when well bred for their special use heavy dray work in towns. A Shire horse, crossed with a half-bred, thick set mare, will produce a useful animal.

Where rough pastures exist, with abundance of water, especially water meadows, a good opportunity exists for breeding and rearing foals. With such convenience several foals are little trouble, and may prove a source of income, either for sale or for use on the farm. Horses from two and a half to three years old will do several days' work on the land weekly if put to light ploughing or harrowing along with an older, quieter horse. At first young horses should not be worked more than half a day at a time. Great care should be taken that the collar fits the shoulders accurately. Sore shoulders caused through a badly-fitting collar may do incalculable harm. Thorough quietness, consistent with firmness, are important items in breaking in young horses. Do not let the animal have a fright of any sort, remembering that the foundation for ill or good is being laid for all time. Avoid strain caused by pulling heavy loads, as this may ruin a horse in the shoulders, back, or legs, even if the trouble does not show at once.

It is not wise to breed from mares with such ills as greasy legs, ring or side bones. Remember the old saying, "like begets like." *E. Molyneux.*

Obituary.

ALEXANDER MACKENZIE.—We regret to announce the death of Mr. Alexander Mackenzie, for a long period manager of the nurseries of Messrs. Thomas Methven and Sons, Edinburgh. Mr. Mackenzie died on the 21st inst. in his 88th year. He commenced his gardening career at Belladrum, Inverness-shire, 70 years ago, and was successively engaged at Bowhill, Fullarton, and Archerfield. He was head gardener in 1854 at Ascraig, which he left in 1866, being shortly afterwards appointed manager of Messrs. Methven's Warriston Nurseries. He was for long treasurer of the Scottish Horticultural Association, and one of the regular speakers at its monthly meetings. He retired from active work some eight years ago.

ANSWERS TO CORRESPONDENTS.

BEE STINGS: *C. P.* If the application of a strong soda, or bicarbonate of soda, solution fails, the person in question ought never to have anything to do with the manipulation of bees. There are a few people to whom the sting of a bee is dangerous, or even fatal. As yet no one knows of a remedy that will meet such a case. In a few rare instances, to eat honey brings about swellings as if stung.

FIG TREE CASTING ITS FRUIT: *Brown.* The dropping of the Figs may be due to various causes, resulting in a sudden check at the most critical period of the fruit's growth. For example, a lower temperature than the trees are accustomed to might cause the fruit to drop, or the more liberal use of water in the house might have the same effect. A deficiency of lime in the soil might also be responsible, for the Fig needs lime, or lime phosphates. Too much moisture at the roots would likewise result in the border being cooler than usual, and cause a check to the tree. The foliage appears to be quite healthy. Give the roots a weak manurial stimulant in which phosphates are present in some form.

GLOXINIA "RUST": *C. C.* The "rust" on your Gloxinias would not appear to be due to any fungous disease, but may be caused by thrips, which are very troublesome on these plants. Syringing with clear water will keep the thrips in check. The damage might, alternatively, be due to condensation of moisture on the leaves, followed by hot sunshine, which would scald the foliage. Let the house be well ventilated, and keep the plants sturdy and strong; they are then less likely to be injured in the way you describe.

NAMES OF PLANTS: *C. T.* Lysimachia vulgaris.—*L. B. H.* Iris orientalis alba.—*W. A. H.* 1, Deutzia crenata; 2, Spiraea canescens; 3, Philadelphus Lewisii; 4, P. Lemoinei erectus; 5, Leycesteria formosa.—*J. K.* 1, Kalmia latifolia; 2, K. angustifolia var. rubra.

TOMATOS DISEASED: *J. W. W.* From your description of the foliage we suspect that the disease on your Tomatos is Black Rot, or Macrosporium Tomato. Remove and burn every fruit which shows the slightest symptom of disease, and spray the plants occasionally with potassium sulphide, especially when they are setting their fruits. Keep the ventilators open wide to prevent a damp, stagnant atmosphere, which would favour disease and weaken the plants.

Communications Received.—J. H.—F. P. D.—N. C. & P. S.—B. & Son—E. B. (Fota)—W. W.—E. M.—Mrs. R. H. P.—E. F. C.

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ILLUSTRATIONS.

NOTES FROM KEW.—VII.*

MY remarks last month on the behaviour of Irises at Kew have given rise to comment by letter as well as in the horticultural press. Mr Dykes believes in summer transplanting, Mr. Jenkins says it is wrong in principle and bad in practice. Mr Divers informs me that at Belvoir, where Irises of the Germanica breed are largely grown, he transplanted them at the same time as herbaceous perennials generally. Another correspondent maintains that they should not be disturbed at the root at it can be avoided. Sir Frederick Moore's observations are instructive. He writes:

"We find that by far the safest time to move Irises is just as the flowers fade; it is better than the spring. They are making new roots then, and stand pulling about. You will often find these Irises spreading out from the borders to the hard paths, and growing and flowering well. Irises growing on the top of a wall never get disease. These plants never flower more freely or look more effective than on top of a wall, and I think that is how we should grow Oncocyclus Irises. We find that plenty of old mortar rubbish from walls, burnt earth from the bonfire, and poor gravelly loam, with ample drainage, suits them, and we have a good show each year. Disease may appear on new plants for some time, and then it spreads to others. On our nursery border, the poorest, hottest, driest place we have, Irises are perfectly free from disease, and we get a splendid display of flowers. In cottage gardens where they are bordered by the wall of the house and path, and often overhung by the roof, they give good results, for the simple reason that they are left alone and often get dry, and the soil is poor. Have you ever noted them in small town gardens? The best Germanicas I think I ever saw were in King's Road, Chelsea. There was dust enough on the leaves to grow them in. It was a hot day, and the reflex heat from the house was overpowering, but the Irises enjoyed it."

In horticulture, as in other matters, we fight for our own views and practices. After all, experience teaches, and when men argue from their own we must respect their views. "There are fifty ways to town and rather more to heaven," wrote Matthew Arnold; so also there are many ways of growing most plants well, and what may be a help under one set of conditions may prove a hindrance under another. There was a time when Roses would not thrive at Kew; when Lilies were a hopeless failure, when even Rhododendrons were believed to require beds of expensive peat, in which they made a poor show. By giving heed to the natural conditions, and especially the soil at Kew these and other failures have been turned into successes. I am afraid we have been treating Irises too well. When the present beds were made for them, special soil (good Ealing loam) was provided. It would most likely have been better to plant them in the natural soil of the Gardens. Bulbous Irises are not in question. They, like Daffodils and Tulips, have a resting season, and transplanting is then performed.

Blue Penstemons are worth more attention than they have yet received. Years ago Sir Frederick Moore and I were together one Sunday morning in June in Messrs. Haage and Schmidt's nursery at Erfurt inspecting rare and beautiful plants, both tender and hardy. The subshrubby Penstemons were glorious, especially the blue-flowered species. They were a discovery. The best of them were P. azureus, P. heterophyllus, and P. cornubus (see fig. 2), the first-named of which is now beautiful in the rock garden at Kew, with flowers, some Gentian-blue, others a kind of blue shot-silk with crimson shading. The species is known to be variable and it includes Jaffrayanus, which Sir W. J. Hooker described as a species in 1858, when a figure of the plant was published in *Bot. Mag.* (t. 5,045). His prediction that it would become a "bedding out" plant has not been realised, although seeing that it continues to produce a succession of flowers in the summer months, and is a hardy perennial, it might well have done so. P. azureus is a short-lived plant and difficult, but when happy it is a gem. P. cornubus varies in colour from blue to white, and is a first-rate rock garden plant. Perhaps when the war is over and we have leisure for such work, the breeding of a race of blue Penstemons will be considered worth while by some expert.

Ononis is not a genus of specially horticultural value, but O. Billardieri has merit as a small leaved, prostrate shrub for the rock garden, as it grows only about a foot high and bears in June clusters of red and white flowers, or rather fruits, the persistent, wing like sepals, coloured crimson and white, being the attractive feature. A few yards off the plant might be taken for a dwarf Broom, but at close quarters one sees why the genus was formerly included in Polygonum, and why O. buxifolia, a near ally of O. Billardieri, was known as P. crispulum. The species vary in habit according to the amount of moisture and exposure they grow in; but they appear to be all mountain plants and genuine rock shrubs. O. Billardieri is quite happy in the rock garden at Kew.

Santolina pinnata is another pleasing little shrub, suitable for the rock garden, as it grows only about a foot high and forms a globe-shaped specimen. Its numerous erect, green stems, and leaves with terminal racemes of button-like, white flower heads, develop in midsummer. It is not unlike S. viridis, the Holy Flax, but that has yellow flower heads. Lavender Cotton, with white leaves and yellow flower heads, is another good plant for the rock garden, being, as Mr. Bean states in *Trees and Shrubs Hardy in the British Isles*, beautiful and interesting, and probably the whitest of all hardy shrubs.

As there is scarcely any summer bedding this year at Kew, flowers in July are less in evidence than formerly. There are, of course, the Roses which are a great feature, and to do them justice a special notice is needed. The beds in the neighbourhood of the Palm House are at their best at the time of writing, a few days of warm sunshine, following a spell of cold, showery weather, having brought them on nicely. The Rose garden near the Pagoda never looked better. It was a happy idea of the late Director, Sir W. T. Thiselton Dyer, to transform a rubbish hole into a garden for Roses of the semi-wild type. I know of

FIG. 1.—[illegible] IN THE WATER-LILY HOUSE, KEW.

* Previous articles appeared in the issues of January 19, February 9, March 9, April 6, May 18, and June 8.

no other garden like it; indeed, only a place like Kew could afford space for big groups of straggly Roses allowed to grow much their own way. The best varieties in flower now are the following: Rubin, Mrs. F. W. Flight, Diabolo, American Pillar, Helene, Seagull, Goldfinch, Blush Rambler, Silver Moon, Lyon Rambler, Edmond Proust, Jersey Beauty, Dorothy Jeavons, Psyche, and Rosa moschata and its double variety. The Rose Pergola near the Rock Garden is also good, though I have seen it better. Two varieties there worth special mention are Veilchenblau, known as Blue Rambler, and Flora Mitten, the former a queer shade of purple, which some folk do not admire; the latter, the best single flowered bunch Rose I know. The flowers are larger than American Pillar, and the petals, which are pale flesh pink and white, do not fall, so that the bunches are good for weeks. Kew obtained this plant from Miss Mitten, daughter of the late William Mitten, Hurstpierpoint, a great authority on Mosses, in whose garden it originated, whether by accident or design is not known. There is no other single Rose like it.

I was once asked for a list of hardy trees and shrubs that flower in July, and could only reply that there were very few. In the first place, a plant that fulfils its mission flowers in spring, grows and makes its fruit in summer, and ripens in autumn. Those garden plants that continue flowering more or less all through the summer have got off the line, or out of gear; they are as unnatural as the fowl which keeps on laying eggs. Domestication has changed their habits, to man's advantage, of course; and Roses, scarlet Pelargoniums, tuberous and semperflorens Begonias, Heliotropes, and similar plants that keep on flowering are our friends, not their own or nature's.

Here is a list of the trees and shrubs in flower in the first week in July: Robinia viscosa, Aesculus californica, a charming little white-flowered Chestnut; Catalpa speciosa, Magnolia glauca, Calycanthus, Philadelphus, the most decorative of all being the snow white double Virginal, of which there is a bed near the main gate (see fig. 3), Bouquet Blanc, and Voie Lactee being other good hybrids of Lemoine's raising; Escallonia langleyensis, E. Philippiana, Spartium junceum, Genista virgata, of which there are scores of big bushes at Kew, where it became naturalised many years ago; G. aetnensis, Cytisus nigricans, C. capitatus, Ligustrum sinense, also a conspicuous feature at Kew; Rhododendron viscosum, R. discolor, Clematis of sorts; Helianthemums, Cistuses, Osteomeles anthyllidifolia, Cotoneaster pannosa, C. salicifolia, C. Harroviana, Spiraea discolor, S. Menziesii, S. Veitchii, S. canescens, S. betulifolia, S. japonica vars., of which Mrs. Anthony Waterer is the best, Pyracantha crenulata yunnanensis, a charming shrub with bright green obovate leaves, the branches crowded with clusters of white Hawthorn-like flowers: Potentilla fruticosa, Colutea arborescens, Deutzia crenata, and Lonicera Heckrottii, the best of the Honeysuckles.

Two other showy trees worth mentioning in this connection are the Piltig Plane (Sycamore), which has long racemes of crimson keys, and is a good garden and park tree, and the variegated Magnolia acuminata, which is really attractive this year. Quite a good list, yet in a place like Kew they do not go far, and, were it not for the Roses, the gardens would look flowerless in July.

Water Lilies, both in the open and under glass, are in full bloom, the queen of them all being the Australian Nymphaea gigantea, with flowers 9 inches across (see fig. 1). It grows well and flowers freely in the tropical tanks here. Lilies proper are developing well, and there should be a good display in a week or two of L. sutchuenense, L. regale, L. japonicum, L. Henryi, L. pardalinum and others. L. giganteum, L. Martagon, L. Parryi, L. elegans, and L. croceum are already in flower. We find many Lilies can be easily propagated from home grown seeds, and plants thus raised thrive better than purchased bulbs. Does L. candidum ripen seed in this country? It is a failure at Kew.

The Potatos are a great success so far, and so are the Onions, though the maggot is in evidence, and we may have to own ourselves beaten by that most destructive pest. Pathologists have so far failed to find a remedy for it. The man who does will deserve a monument. *W. W.*

[Photograph by E. J. Wallis.

FIG. 2. PENTSTEMON CORIFOLIUS FLOWERING IN THE ROCK GARDEN, KEW.

ORCHID NOTES AND GLEANINGS.

BRASSO CATTLEYA IMPERIALIS.

AT the meeting of the Orchid Committee of the Royal Horticultural Society on June 18 last, A. P. Umliffe, Esq., Woodford, Salisbury, showed a new cross named Imperialis between Cattleya Mossiae and Brasso-Cattleya Cliftonii (B. C. Digbyano Mossiae × C. Trianae), which should be recorded, although it failed to secure an award, for it had many excellent features which will doubtless develop satisfactorily. The flower, which is of the largest among Brasso-Cattleyas, is light rose-pink with a pale yellow centre to the fringed labellum, which has dark purple markings at the base. All the large-flowered Brasso-Cattleyas are beautiful, but there is some difficulty in distinguishing the different varieties on account of the predominance of light colours without sufficient darker markings to render identification certain.

ONCIDIUM LANCEANUM.

THIS Oncidium is reputed to be one of the most difficult of Orchids to cultivate for a number of years, and although some years ago good importations of it were received, but few specimens remain in cultivation. But it has been proved that when grown under proper conditions the plant does not necessarily decline in vigour. The cultivation of the plants in pots, placed on the staging, probably accounts for most of the losses, for the most vigorous plants are generally those grown in baskets and suspended from the roof-rafters of a warm, intermediate house.

Probably one of the finest plants in the country has been in the care of Mr. A. Taylor, gardener to Mrs. D'Arcy, Stanmore Hall, Stanmore, Middlesex, for many years; it flowers profusely every year, and is again sending up four strong, branched spikes, bearing flowers about two and a half inches in diameter, and very fragrant. The sepals and petals are honey-yellow, densely spotted with chocolate-brown; the handsome lip is rose-purple at the base, changing towards the front to rose-pink and blush-white. The species was first introduced from Surinam in 1834, and has since been collected in British Guiana, Trinidad and other localities.

The plant at Stanmore Hall has always been grown in a Teak-wood basket and suspended in an ordinary stove house with an even, but not high, temperature. Water is freely given the roots during the season of active growth, but the amount of moisture is restricted carefully in winter, although the compost is not allowed to become excessively dry for any lengthened period.

NOTICES OF BOOKS.

TIDAL LANDS.*

THIS work, the authors explain, is primarily concerned with those problems which underlie the maintenance of coastal and riparian lands, and, as a factor in such, the extent to which horticulture may be enlisted in the cause of conservation. So far as we are aware, it is the first English book treating of the preservation and reclamation of tidal lands both from a natural and an artificial standpoint. The engineer deals with such subjects as tidal and current data; the foreshore; tidal land and erosion and accretion works; State and local control; complementary problems; and authorities having powers and duties in relation to defence against the sea. Professor F. Oliver's part, relating to the biology and botany of the subject, will interest alike the student and the practician. For some years past he has devoted his vacations to the investigation of the vegetation of various sea shore and salt marsh districts, both at home and on the other side of the Channel, and his work will doubtless stimulate further activity in the same direction. Some idea of the scope of the part of the book may be gathered from the headings: The Evolution of Vegetation; The Fixation and Plant Protection of Sand Dunes; Plant Winning on Tidal Lands; Plants of the Shingle Beach; Plants of the Salt Marsh, etc.

In relation to nutrition, he states that an idea of the work done by the root in water absorption is obtained from the fact that Maize transpires on the average 2·4 lb. of water per stalk per diem. "This means that the crop planted in the ordinary way would take 244 tons of water from an acre of ground during the growing season, and this from a soil so dry that no mere pressure could express a drop of water from it."

It will come as a surprise to many that only thirty out of about 2,000 species of flowering plants in the British flora occur between tide limits, and only about a score of these are common. For the greater part these plants are succulent and smooth. Artemisia maritima and Obione portulacoides being exceptions. Grasses constitute the most important element in the vegetation of salt marshes. Among these Glyceria maritima, Festuca ovina var. rubra, and Triticum pungens are prominent. Considerable space is devoted to the consideration of the recent rapid spread of Spartina Townsendii on the Sussex, Hampshire and Dorset mud flats, where enormous areas have been covered by it within the last twenty years. The illustrations constitute an important feature of the work.

* *Tidal Lands. A Study of Shore Problems.* By Alfred E. Carey, M.Inst.C.E., and F. W. Oliver, F.R.S., Professor of Botany in University College, London. 8vo, with 29 plates and 52 illustrations in the text. (Blackie & Son, Ltd., 50, Old Bailey, London, E.C. 1918.) Price 12s. 6d.

TREES AND SHRUBS.

THE CATALPA IN LONDON.

THE Gray's Inn Catalpa, which is said to have been planted by Bacon, is usually regarded as the largest and oldest tree of its kind in London, and by some writers has been described as the finest specimen in this country. Though there is no wish to pull this historic tree from its proud position, yet recent research as to the history of the Catalpa and numerous measurements of existing specimens that have been taken by way of comparison, prove that the Gray's Inn tree is neither the largest nor the oldest in London. That Bacon, when appointed Master of the Walks at Gray's Inn in 1597, planted this Catalpa is open to grave doubt, the introduction of the tree not being recorded until 1726, or fully a century and a quarter later. There are two Catalpas of about equal size growing in the gardens at Gray's Inn, to one of which is attached a tablet with the following inscription:—"This Catalpa tree is said to have been planted by Francis Bacon, when Master of the Walks, Anno Domini, 1[illegible]." Owing to its recumbent mode of growth it is difficult to give exact measurements of the tree. The main stem, which is 9 inches in diameter, rests on the ground, and is partly buried in the soil for about 9 feet in length, after which it grows upwards. The girth at this point being 5 feet. As near as can be ascertained, the trunk girths 7 feet at ground level. The branches extend in a somewhat horizontal direction, and being of considerable length and weight are supported by a number of stout props, one of the branches which is buried in the soil having probably rooted. The total height of the tree is about 28 feet, and the branch spread 45 feet. The other Catalpa is growing on the opposite side of the garden, and is said to be a seedling from Bacon's tree, the branch spread of which extends to 60 feet, while the stem at ground level and at 5 feet girths 6 feet 9 inches and 5 feet 10 inches respectively. It is about 40 feet high, and in splendid health, but, like the parent tree, the heavy branches, four in number, take a somewhat recumbent and horizontal style of growth, and are supported by props. Both trees are growing on a mound, or more probably the soil has at some time been banked up around the leaning stems.

By way of comparison with the above, the following measurements of other Catalpa trees in the London area are interesting:—

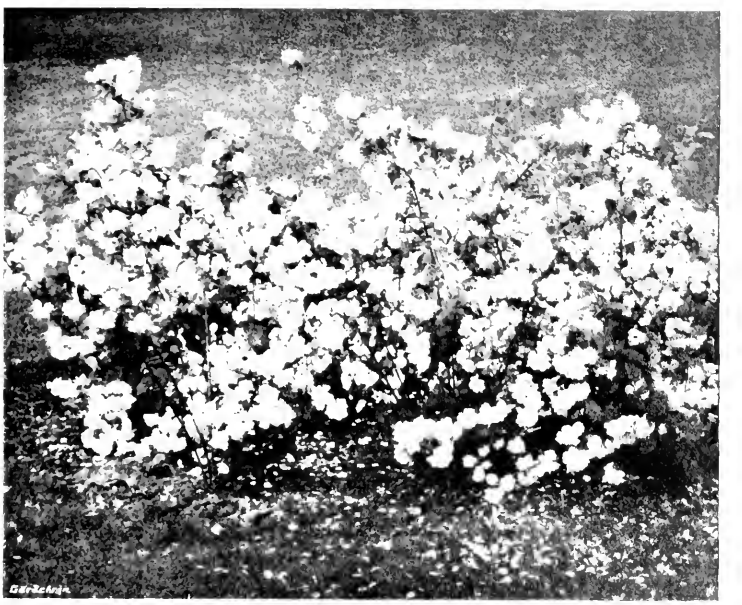
Holland House: The largest Catalpa girths 12 feet 1 inch at 2 feet, and 8 feet 10 inches at 5 feet from the ground; another is 7 feet 2 inches at 3 feet, the branch spread 51 feet.

Manchester Square Catalpa: Girth 7 feet 7 inches at 3 feet, the spread of branches extending to 54 feet.

Highbury Hill Catalpa: 7 feet 1 inch in girth at 3 feet; branch spread 42 feet.

Fulham Palace Catalpa: 5 feet 9 inches at 3 feet; branch spread 43 feet.

From the above it will be seen that the Holland House Catalpa is fully twice as big, and those at Manchester Square and Highbury Hill



[Photograph by E. J. Wallis.

FIG. 3.—PHILADELPHUS LEMOINEI VIRGINAL.

(See page 2.)

nearly half as large again as the Gray's Inn tree. As to the date of planting the Gray's Inn tree, reference to the history and introduction of the Catalpa shows that the tree was first described by Catesby in 1731, and again by the same botanist in his *Trees of North America* in 1767. The Catalpa is described and figured in the *Botanical Magazine*, 1808, where it is stated: "The plant has been long an inhabitant of our gardens, being introduced by the same botanist (Catesby) about the year 1728. It bears the smoke of large towns better than most trees; the largest specimen we have ever seen grows in the garden belonging to the Society of Gray's Inn." There is no reference to the Catalpa by any of the various writers on tree.

Gerard, Parkinson, Johnson or Evelyn, all of whose works were published after Bacon's death, and it is hardly likely that so remarkable a tree could have escaped the notice of all these botanists, especially at a time when particular interest was being taken in the introduction of new plants. Miller, in his *Dictionary of Gardening*, 1737, states that the Catalpa was brought

from the Bahama Islands by Mr. Catesby a few years before. It has been suggested that Raleigh, who visited Gray's Inn during Bacon's time, may have brought seed of the Catalpa from Virginia, but such a proposition is hardly tenable in face of the fact that the tree was only discovered a century later by the banks of the Mississippi

It will be evident from the above that the so-called Bacon's Catalpa is not the largest tree of its kind in this country, and as size denotes age, neither can it be considered as the oldest nor to have been planted by Bacon. *A. D. Webster.*

ON INCREASED FOOD PRODUCTION.

CELERY.

CELERY is one of the most important crops of the many vegetables that should be grown for next winter's supply. Celery may be eaten as a salad or cooked as a vegetable; for either purpose it is one of the most palatable dishes, and is said to be of much value medicinally. During the next six weeks Celery may be planted in any position of the garden, and it will succeed well in all soils, provided sufficient care is bestowed on its cultivation. There are three important rules which should be observed in growing Celery, (1) to select a good variety, (2) to give the roots a liberal supply of manure, and (3) an abundance of water during its period of growth. For late supplies the trenches should be of a moderate depth. The bottom soil should be broken with a fork, and the trench three-parts filled with half-decayed farmyard dung or London manure. The manure should be trodden firmly, the best of the excavated soil placed on it, broken down finely, and the plants carefully set with a garden trowel. One, two, or three rows of Celery may be grown in the same trench, the width of which is determined by the number of rows grown. Water the roots thoroughly and damp the plants overhead in the evenings during fine weather to favour quick growth. Every ten days a dusting of soot should be applied; this material helps to ward off attacks of the Celery fly, and at the same time is a fine stimulant

Copious supplies of manure-water should be applied to the roots during the growing season. Remove all side-shoots as they appear, and keep a sharp watch for the leaf-mining maggot, which should be picked off and destroyed.

Pink or red varieties should be chosen in preference to the white sorts for late supplies, as they are generally much more hardy; my favourite varieties are Aldenham Pink and Standard Bearer.

Wherever Celery is properly grown the land will be well prepared for almost any crop the following season and requires very little preparation. In addition to digging deeply for making the trenches, the whole of the soil between the latter will be needed for earthing up the plants, which means that the soil will be fully exposed to the beneficial influences of the weather. *Edwin Beckett.*

VEGETABLE MARROWS.

THE appeal from the Food Production Department for increased cultivation of Vegetable Marrows is sure of a sympathetic reception, for this is one of the most popular vegetables with the allotment cultivator. The elaborate mound which convention seems to decree must be made for the plants' accommodation is not at all essential to their well-being; in fact, under some conditions I am convinced it is a serious drawback, and militates against success. In the private garden, where the crops are under daily observation, and where copious waterings can be given as often as may be needed, plants on the mounds and raised beds do not suffer. But it should be remembered that, particularly when exposed to winds, the mounds, which are often composed chiefly of loose textured materials, dry out very rapidly. Frequently the worker can visit his plot at only weekly intervals, and the plants are likely to suffer from drought even when water is readily available. Another objection to the system of raising the soil is that unless unusual care is exercised, the rooting medium is far too loose and too easily penetrated by the roots, which results in soft and sappy growth and very few fruits. On heavy, low-lying soils, which are liable to flooding after rains, raised beds are necessary, but otherwise, if the usual procedure is reversed, and a pit is dug for the reception of the manure and soil, much greater success will be obtained. By this method the young plants may be more effectively screened from cold winds during the early summer.

The bush Marrow, which seems to be almost entirely ignored by professional gardeners, is deservedly popular with amateurs, who appreciate its non-rambling habit. It has been contended that bush Marrows are not so fruitful as the trailing sorts, but eight or nine fruits may easily be grown on a bush plant. Often the bush Marrow will produce its crop of fruits in quick succession and so have a short season, but this may be guarded against by gathering the fruits as soon as they are large enough for the table, and by setting out three or four plants according to requirements at fortnightly intervals. In point of quality the bush Marrow is equal to most of the long-fruited trailing sorts. It is, perhaps, inferior to a well-grown Custard Marrow, but the last-named is scarcely a profitable vegetable for the small garden in war time.

CLIMBING HARICOT BEANS

THAT under certain conditions Climbing Haricot Beans may be grown and ripened for winter use in this country was amply demonstrated by the examples shown at the R.H.S. meeting last autumn by Messrs. S. Bide and Sons. The bine was almost as long as that of the longest Scarlet Runner, and was amply furnished with goodly pods, packed with Beans. The primary object of the exhibit was to illustrate the vigour and fruitfulness of the seed, and it was scarcely to be expected that the precise cultural details afforded to the plants on view would be stated. But I feel that one could safely hazard that the method adopted was similar to that usual for Scarlet Runners in well-managed gardens. That is, seeds were sown under glass in the spring and the seedlings set out in their fruiting quarters some time towards the end of May, after having been properly hardened. Then, as with Scarlet Runners, supports would be provided, watering attended to during dry weather, and a stimulant given when the plants were in full bearing. If these Beans are worth growing, surely they are worth growing well, and should be given equal attention to that afforded the Scarlet Runner, but *J. F.*, in recounting his methods for this season (see p. 243), is very half-hearted. He anticipates and has prepared for failure. I am almost tempted to say he deserves it, for he has, like a timorous general, played for safety, and "planted the Beans between Potatos, so if they fail there will be no waste of ground." I am not a pessimist, but in such conditions I should expect the Beans to fail, if the Potatos succeed. Climbing Beans delight in, and respond to, warmth, moisture, and good living—so does the Potato. If these conditions, so necessary for the Beans, are present, what will be the result of the struggle for supremacy between the two vegetables? Flanked on both sides, the Beans are likely to be overwhelmed. There is yet another danger for the Beans so situated. The chief difficulty in their successful cultivation appears to be that of properly ripening the seeds. Yet, unless his Potatos are of an unusually late variety, the tubers must be dug, and in so doing the roots of the Beans mutilated, at a most critical time. *A. C. Bartlett.*

The Week's Work.

THE KITCHEN GARDEN.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey

TOMATOS.—Pay careful attention to tying and watering outdoor Tomatos which have started well, and are growing freely. When the crop is set the plants may be mulched and stimulants in liquid form can be safely applied. If the season is favourable their growth will be rapid, and the fruit will ripen from August to November.

TURNIPS.—A good breadth of Turnips should be sown during July to obtain roots for winter use. Chirk Castle Black Stone is one of the most hardy and valuable Turnips in cultivation for winter use. Those who like the yellow-fleshed varieties should grow Orange Jelly, which is also hardy and of good quality. Further sowings of Turnips may be made towards the end of the present month; the weather has much to do with the success of this crop, and it is not wise to depend on any one sowing. Dust the seedlings lightly at short intervals with lime, wood-ash and soot, and stir the ground on frequent occasions with the hoe. There is no necessity to reserve ground for Turnips; it should be possible to clear a good breadth of early and second early Potatos in time to sow Turnip seed. Chirk Castle is rarely injured when left in the open ground, and many only pull and store the roots when it is necessary to clear the land.

SCARLET RUNNER BEANS.—These Beans are growing rapidly with the hot sun, and are fast creeping up their supports, making large, healthy foliage. Prevent overcrowding by pinching out unnecessary growths; if extra large pods are required the clusters of fruit may be thinned also. Syringing the plants freely in the evenings of hot days will assist the plants in setting and swelling their pods.

PARSLEY.—A further sowing of Parsley may be made about this date, and in a warm situation. If a convenient position can be chosen to permit of a frame being placed over the plants during severe weather so much the better. If sowings were made as recommended, the seedlings properly treated, and given plenty of space, another sowing at this date is not often necessary. There is, however, always a regular demand for this most useful herb, and provision must be made by sowing in cold frames, or transplanting a sufficient number of plants in some position where protection can be afforded during severe weather.

SEAKALE.—Keep all surplus shoots removed from Seakale plants as they appear, leaving only the strongest. Frequent hoeings of the soil will be necessary during the summer to keep the ground clear of weeds. In dry weather give the plants a good dusting of soot between the rows, watering freely afterwards. Liberal waterings with diluted liquid manure will help the plants to form large crowns suitable for forcing.

THE ORCHID HOUSES.

By J. COLLIER, Gardener to Sir JEREMIAH COLMAN, Bart., Gatton Park, Reigate.

THUNIA.—Although the flowers of Thunia do not last for a long time after they are fully expanded, the plants are, nevertheless, very attractive. T. Marshalliae, T. Bensoniae, T. candidissima, T. Veitchiana and T. Brymeriana are species and hybrids well worth including in any collection. As these plants pass out of flower they should be removed to a cool, well-ventilated greenhouse, where the temperature does not fall below 55°. The stems and leaves should be exposed gradually to the full sunlight, so as to mature them thoroughly. The plants will need to be watered at the roots occasionally so long as the leaves remain green; when the colour begins to change to yellow, moisture should be gradually withheld. When exposed to the sunlight, and in a dry atmosphere, the plants are subject to attacks of red spider. To prevent this

they should be placed on their sides and syringed with insecticide, or soft soap dissolved in warm rain-water, allowing sufficient time for the leaves to dry before syringing the plants with clear water. Any plants that have failed to produce flowers, and of which the stems are growing too long, should have the points of the shoots pulled out, and the plants subjected to the same treatment as those that have bloomed. Thunias may be readily propagated during this month from the back pseudo-bulbs, which should be cut through at the joints into lengths of 4 to 6 inches. These should be inserted firmly in small, well-drained pots, using a rooting mixture of chopped Sphagnum-moss and coarse silver sand. Placed in a frame in the warmest house they will soon develop roots and top growth, when they may be potted singly in a rich compost. When growth is completed they should be rested in a manner similar to the older plants.

SOBRALIA.—As plants of Sobralia macrantha, S. xantholeuca, S. Lucasiana, and hybrids, pass out of flower, they should be repotted or resurfaced. As a general rule these plants are vigorous and easily grown, and produce a large number of thick, fleshy roots. When specimens have become so pot-bound as to cause them to be making smaller stems than those of previous years, they should be given increased rooting space. The pots or pans should be well drained, and the plants potted firmly in a mixture of good fibrous loam and peat or Osmunda fibre, with a sprinkling of crushed crocks added, to keep the whole porous. Specimens that do not require root disturbance may be assisted with diluted cow-manure water once or twice a week while they are growing freely. Sobralias are best grown in a house with an intermediate temperature. Plenty of water is required during the summer, and even in winter a moderate supply is required, as they have no definite resting season. Being subject to attacks of red spider they should be syringed freely on all favourable occasions; be careful to wet the undersides of the leaves. The foliage should also be sponged occasionally with insecticide.

THE HARDY FRUIT GARDEN.

By JAS. HUDSON, Head Gardener at Gunnersbury House, Acton, W.

THINNING PEACHES AND NECTARINES.—Peach and Nectarine trees are, in many instances, bearing good crops. Lose no time in thinning the fruit now, leaving a margin for contingencies. The size of the fruit when matured should be considered, and late kinds need to be cropped more lightly than early ones.

STRAWBERRY LAYERING.—Where the forcing of Strawberries is being continued the first runners should be reserved for the purpose. After that give early attention to the propagation of the stock for planting out. Runners are not developing very kindly this season; a good watering will assist the plants to make freer growth. Nothing equals pot runners for planting out, and the use of potted plants will make all the difference between a light and a good crop the first season. Even if these have to be purchased, it is better than putting out ground runners. Those who can spare the room for growing a stock of plants one year in advance for the special purpose of securing early runners have a great advantage. In making these stock-beds the ground should be well trenched and manured, the rows made 4 feet apart, and the plants set 2 feet apart in the rows. When the runners are all taken the intervening spaces should be filled with the same varieties, and thus a good plantation will be secured for the following season. In doing this there need not be any waste of ground, for the intervening vacant spaces may be cropped with a quickly maturing vegetable at once. By this plan very early runners may be obtained, and these will be best for every purpose. Many trade growers plant Strawberries in this manner, and it amply repays them. When purchasing additional varieties give the order in good time, and thus secure an early delivery. Even if the same variety be grown it pays well to renew the stock every few years. This may not apply to all soils, but it does in the majority of cases.

EARLY-PLANTED FORCED STRAWBERRIES.—The plants should be well established, and any flower-spikes that appear may be allowed to develop. I have practised this system with Vicomtesse H. de Thury, and have secured a good return in ripe fruit by the end of August. The berries of Royal Sovereign ripen about a fortnight later under this method, and provide an excellent succession. A mulching of litter should be applied as soon as possible to keep the soil cool and moist. Watering is beneficial to these autumn-fruiting plants until the berries begin to colour. By that time they will be firmly established. Do not allow runners to develop and weaken the plants. Continue to damp the foliage overhead on warm days, in order to keep them moist during the late evening.

FRUITS UNDER GLASS.

By W. J. GUISE, Gardener to MRS. DUNSTER, Keele Hall, Newcastle, Staffordshire.

TOMATOES.—Where Tomatoes are required in the autumn and winter, seed should be sown at once, as it is difficult to get the fruits to set if plants are raised after this date. Plants carrying heavy crops of fruit should be top-dressed with loam and decayed manure. Liquid manure or concentrated fertilisers may be used twice weekly. Keep all side growths removed, and, as the fruits ripen, shorten a little of the foliage, but not to the extent of denuding the plants. Admit air freely during the day, but reduce the amount of ventilation at night.

PEACHES AND NECTARINES. Give very careful attention to trees that are ripening their crops. The hottest season is still to come, and if the trees are to be kept free from insects the syringe should be used freely. No harm will result if the hose is brought into use to cleanse the growth and thoroughly moisten the borders; the syringe should then be used twice daily—early in the forenoon and late in the evening. Continuous syringings of clear water will rid the trees of red spider. All shoots that have served their purpose and are not required for next year's crop should be cut out to allow light and air to enter the tree, or the foliage will ripen prematurely, and the wood remain a pale green colour. Old-established trees from which heavy crops have been gathered will be benefited by light sprinklings of concentrated manure or diluted liquid manure, but feeding must not be done to excess or the trees will commence to make second growth when they should be resting. Let the ventilators remain open to their fullest extent day and night, and on no account should the trees lack moisture at the roots.

VINES. During very hot weather it is advisable to shade ripe Grapes to keep them in good condition. The berries of Black Hamburgh are liable to "shrivel" in hot sunshine after they have ripened. Only a light shading is necessary, such as is provided by scrim, garden netting, or a very thin coating of limewash to which a little salt has been added to make it more lasting. When the Grapes have been cut let the vines be syringed daily during hot weather. If the borders are dry give a good soaking of clear water, followed by liquid manure. Lateral shoots may be allowed to grow unchecked, but not to the extent of excluding the light and air from the vine. Where the crops are swelling examine the borders frequently, especially those outside, and, if the soil be dry, loosen the surface carefully with a fork. In the first instance apply clear water, and afterwards liquid manure. Examine bunches with swelling berries, thin crowded clusters, and remove small berries, which are apt to spoil the appearance of the bunch. The varieties Madresfield Court and Black Alicante need a little extra attention in this respect.

STRAWBERRIES. No time should be lost in layering runners for next year's forcing. Where strong "maidens" were planted out last August and the flower-buds removed this spring, the plants should now have excellent runners in abundance. Root them in pots 3 inches in diameter, filled with rich loam mixed with a little manure from a spent Mushroom-bed. The young plants will need spraying every evening in dry weather. The essential detail in securing good forcing plants is to commence the work of layering early, so that the crowns and the roots are thoroughly developed before the season is far advanced.

PLANTS UNDER GLASS.

By E. HARRISS, Gardener to Lady WANTAGE, Lockinge Park, Berkshire.

LAPAGERIA.—This plant is now in active growth, and constant attention must be given to the training of the young shoots. Old-established plants will need plenty of stimulants. There is nothing better than manure-water from the farmyard. Failing this, some form of concentrated manure must be given. The plants should be vigorously syringed with rainwater twice a day during fine weather, and should aphis attack the young growths fumigate them at once.

LILIUM SPECIOSUM. This Lily will now be in need of plenty of stimulants, and if there is room for a little fresh soil on the surface of the pots it will be of great advantage. See that the growths are supported with stakes, and kept apart from each other. Plunge the pots up to their rims in ashes to keep the roots moist. Syringe the plants once a week to keep them free from aphis.

HYDRANGEA HORTENSIS. When this plant has finished flowering, the roots will require watering just as regularly now as they did when the flowers were developing. After flowering, each plant should be stood out-of-doors in a sheltered position and the pots plunged to the rims in ashes. When suitable cuttings are available they should be inserted singly in small pots filled with a sandy compost. Plunge the pots in a moderately warm hot-bed in a propagating frame and keep them shaded from bright sunshine until roots develop.

CAMPANULA PYRAMIDALIS. Seeds of the Chimney Campanula may be sown in boxes containing sandy soil and germinated in a cold frame, kept closed and shaded. Old plants are throwing up their flower spikes, and require plenty of water at the roots. Liquid manure and soot water should be used liberally at this stage, but feeding should be discontinued as the flowers develop. The flowering of the plants may be considerably retarded by placing them at the foot of a north wall.

IPOMŒA RUBRO-CŒRULEA.—If grown under the roof of a glasshouse having a minimum temperature of 50°, this plant will supply plenty of flowers during late autumn and winter. To raise plants for this purpose seeds may be sown now in 2½ inch pots, placing one seed in each pot. Plunge the pots in a hot bed in the propagating frame until the seedlings appear. Afterwards grow the plants in a house having moderate temperature, potting them on when necessary in a fairly rich compost. Syringe them with an insecticide occasionally as a precaution against attacks of red spider.

THE FLOWER GARDEN.

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

BULBS IN GRASS. These will be so well matured that the grass can be mown with the scythe, and immediately afterwards with a lawn mower, which will leave the turf quite smooth. Should the bulbs have grown so thickly as to impair the production of flowers, now is the time to lift, to select the largest bulbs, and to replant. The surface should be heavily rolled subsequent to replanting. There is no better way of re-arranging the plants than to scatter the bulbs over the grass. Plant with a spade, pressing the soil apart, and inserting the bulbs before withdrawal.

ROOT-PRUNING. There is frequently need to thin shrubberies of plants too valuable to be disposed of by burning. It does not take long to root-prune any but very large specimens, and if done now it conduces much to their successful transplantation in autumn, by which time a mass of fibrous roots will have formed all round the cut parts. A spade thrust down to its full length all round the tree is all that is required to ensure this desirable end.

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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.*

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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*

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 62.5.

ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, *Thursday*, July 4, 10 A.M.: Bar., 30.4; temp., 57.5°. Weather Sunny.

Fuel for Glasshouses.

In obtaining from the Controller of Coal Mines the announcement that an allowance of fuel for the heating of greenhouses and conservatories in private establishments will be forthcoming during the coming winter, the Royal Horticultural Society has done valuable service for horticulture. Gardeners will be grateful for the announcement, as it will enable them to lay plans for preserving their stocks of more valuable plants, which represent, in many cases, the work of generations of patient hybridisers or the toilful efforts of collectors in out-of-the-way parts of the world. National interests demand that there should be a saving of fuel in every direction, and many gardeners have anticipated this need by closing the majority of their stoke-holes and utilising their glass, wherever possible, for the raising of additional food crops. This economy of fuel will still be necessary, but growers will be able for the present, and until the fuel situation becomes more acute, and the continuation of supplies rendered impossible, to reckon on a sufficiency to preserve their exotics that are of exceptional value or interest. Should the supply fail entirely, growers must fall back on their own resources, and in large establishments substitutes may be forthcoming in the shape of rough timber and tree stumps sufficient to carry on. The basis of the allowances made by the Controller are as follows:—In respect to a single greenhouse attached to a dwelling-house there will be no allowance except under special circumstances. For Orchid houses, tropical houses, and others containing exotics of exceptional value or variety, or which are used for scientific purposes, an allowance based on two-thirds of the average normal consumption will be made. For ordinary ranges of greenhouses one-half of the average normal consumption will be allotted, conditional on the houses being used for the growing of vegetables or for forcing food plants for bedding out or other utilitarian purposes, and subject to certain houses being closed and the plants confined to a part only where the extent is considerable. In the case of ranges of greenhouses used for ordinary plants and flowers, one-quarter of the average normal consumption will be allowed, conditional upon the fuel being available in any month after meeting other requirements.

Whether the Coal Controller withdraws the concession tentatively granted or not, growers should begin to consider measures that will minimise the need for fuel, and obtain such substitutes as are forthcoming. The fullest use should be made of low houses and heated pits for wintering tender plants, and the larger structures devoted to the growing of early vegetables. It will be much easier to manage these small houses, and they will permit of the free use of blinds and garden mats in times of frost and cold winds.

Even tender plants will submit to relatively low temperatures, provided they are grown as hardy as possible in summer and autumn. The ventilators should be fully open on every favourable occasion, and the amount of atmospheric moisture reduced within the limits of safety. The forcing of fruits may be discontinued until happier times. Fruit trees in pots may be plunged in dry soil or a bed of ashes in a perfectly cold house and allowed to develop naturally. They will supply fruit in advance of the outdoor crops, and such trees will be benefited by the rest from hard forcing. The forcing of vineries and Peach houses may also be discontinued. Here again both the vines and the trees will be benefited by the rest.

The hot-water installations should be thoroughly overhauled some time in the near future, the flues cleaned and the dampers adjusted, for skilful regulation of the draught through the furnaces means economy in fuel consumption. Only an experienced hand should be entrusted with the management of the stoke-hole, for a clever stoker will get infinitely more heat from a ton of coals than one unused to the work.

It may be possible to obtain anthracite more readily than the soft coal used for ordinary stoves in dwellings. Those who have used this hard fuel know that it entails less work in stoking, and that one ton goes nearly as far as double the amount of coke. With regard to substitutes for coal and coke, the best is rough timber, including tree roots. Many estates will furnish both these materials, and the collecting of these and the lopping of decayed branches in avenues and woodlands will provide profitable work for the staff in spare time. Cinders from the house will burn freely in garden furnaces mixed with logs of wood, and should be saved for the purpose. Slack coal will burn freely with a good draught, and give excellent results if a base is built up of old tree roots. In some parts dried turf and peat are used as fuel, and these might be made use of in keeping in the fires during the daytime.

BATTLE-SCARRED WASTES.—Under the auspices of the Royal Horticultural Society's War Relief Committee, a lecture will be delivered by the Rev. ALBERT LEE, F.R.G.S., at the London Scottish Drill Hall, Westminster, on July 16, at 3 p.m. The lecture will be illustrated by lantern views. The title is "Battle-scarred Wastes," and is designed to show the havoc caused by the war throughout the fertile gardens, orchards and flower-growing regions of Northern France and Belgium.

THE BRITISH CARNATION SOCIETY AND THE TRAFALGAR SQUARE FLOWER FAIR.—The amount raised at the stall of the British Carnation Society at the recent Flower Fair in Trafalgar Square was £205 1s. 5d.

THE "SWEET PEA" AMBULANCE.—By contributions of money and the sales of Sweet Peas at the Flower Fair at Trafalgar Square, the National Sweet Pea Society was able to raise the sum of £180 2s. 6d. for British Ambulances in France. The sum of £200 is needed to provide one ambulance, and the majority of the Sweet Peas exhibited at the Drill Hall on the 2nd inst. were sold to make up the required amount. The ambulance will be named "The Sweet Pea."

ALLOTMENTS AT ALEXANDRA PARK.—Fifteen acres of land at Wood Green are being laid out to provide 225 war-time allotments. This land adjoins the race track at Alexandra Park, and is the property of the Alexandra Park Race Course Syndicate. The Syndicate has agreed to surrender the land for spade cultivation, and the Cadet Corps of the Women's Land Army will undertake the work after this year's hay crop has been harvested.

WOMEN FRUIT PICKERS.—Two thousand women will be engaged in fruit picking in the Wisbech district during the soft fruit season, under the auspices of the Women's Branch of the Food Production Department.

HONOUR FOR SIR ARTHUR H. LEE.—In recognition of his conspicuous public services as Director-General of Food Production, Col. Sir ARTHUR H. LEE, M.P., has been raised to the peerage. It will be remembered that in 1917 the new peer presented the Chequers estate to the nation for use as the official country residence of British Prime Ministers.

A FRENCH GARDENERS' ASSOCIATION.—An association of professional gardeners has recently been formed at Geneva, with a comprehensive programme of improvements to be applied where possible to the wages and status of gardeners employed in private houses.

NEW ROSES AT BAGATELLE.—We have received a report on the new Roses sent to the Rose gardens at Bagatelle, near Paris, for trial, and it is satisfactory to learn that both the Gold Medals have been awarded to Roses sent from English-speaking countries — one to Messrs. HOWARD AND SMITH, of Los Angeles, California, for their new variety, Los Angeles, and the other to Messrs. WILLIAM PAUL AND SONS, LTD., of Waltham Cross, for Paul's Scarlet Climber. Los Angeles is the result of a cross between Lyon Rose and Mme. Segond Weber. It has the beautiful colouring of Lyon Rose, without its capriciousness, flowering all through the season. Paul's Scarlet Climber was described and illustrated in *Gard. Chron.*, May 29, 1915.

PLATYCODON GRANDIFLORUM (see fig. 4).—This handsome, tuberous-rooted perennial of the Campanula family is known as the "Chinese Bell-flower." The genus is monotypic, but the solitary species is very variable, and the several distinct forms may be accounted for by the wide distribution of the plant throughout Northern Asia, China and Japan. It is an excellent border plant, easily raised from seeds, and grows well in light, rich soil. The flowers are large, and open more widely than in most Campanulas: they develop on the upper parts of the stem, and in the axils of the upper leaves. Though introduced into cultivation more than one hundred years ago, Platycodon grandiflorum is not so plentiful in gardens as its merits deserve. This may be due to its dislike of transplanting, as unless the long roots are handled very carefully they get broken, and the plant bleeds profusely, causing it to rot and die. Old established plants come up year after year, increase in size, and flower freely during the summer. The typical plant grows about 2 feet high, has glaucous leaves and rich blue flowers netted with lines of a deeper shade. There is a pure white variety called Album, and one known as grandiflorum which flower later in the autumn. The latter is taller than the type, with smaller but more numerous blue flowers. The best of all is the variety Mariesii, illustrated on fig. 4; this is a dwarf form, with large, rich blue flowers on stems about 1 foot high. The dense, sturdy habit makes the plant exceedingly attractive on a rocky bank or in the rock garden. There is also a white-flowered form of Mariesii in cultivation.

ONE HUNDRED AND FIFTY GUINEAS FOR A ROSE BLOOM.—The Rose Lover, Mr. ANSELL CHARLTON, paid £157 10s. at the Trafalgar Square Flower Fair, 1918, for a bloom of Charles E. Shea. Mr. ELISHA J. HICKS stood next which Mr. LLOYD GEORGE presided.

PROPOSED FLORAL MEMORIAL TO THE LATE MR. J. HARRISON DICK. The American Dahlia Society has decided to offer a special prize for the best new long-stemmed, seedling Dahlia exhibited at its autumn show this year, and if the successful variety is of sufficient merit it will be named J. Harrison Dick, in memory of the late secretary.

A FLORIFEROUS RHODODENDRON.—A plant of Rhododendron Mrs. G. H. SHAW, in Mr. H. SHAW'S garden at Addlestone, Surrey, has produced twenty large trusses on the same branch, the whole forming a gigantic inflorescence, which when viewed from above, had the appearance of a perfect wreath of blossom. The twelve largest trusses forming the inflorescence were disposed round the main stem with precise regularity, and were of uniform length. Mr. SHAWS informs us that Rhododendrons have flowered unusually well with him this season.

FREAM MEMORIAL PRIZE. The Board of Agriculture and Fisheries has awarded the Fream Memorial Prize for 1918 to Mr. LEONARD C. ROBINSON, a student of the Harper Adams Agricultural College, Newport, Salop, who took the highest marks at this year's examination for the National Diploma in Agriculture.

PROPOSED SCOTTISH RESEARCH STATION FOR PLANT BREEDING.—The Highland and Agricultural Society of Scotland has agreed to give a grant of £2,000 towards the proposed Scottish Research Station for Plant Breeding, on condition that the Board of Agriculture for Scotland provides at least an equal sum to that raised from other sources, and that representatives from agricultural bodies in Scotland should be represented on the governing body. It is proposed to confer with the Scottish Seed Trade Association, which is interested in the matter. The aim of the promoters is to raise a sum of between £20,000 and £30,000.

THE PUBLIC SERVICES OF A GARDENER'S SON.—The Prime Minister, in a letter of appreciation of Sir JOHN BETHELL'S services to the Secretary of the Committee appointed to present him with an illuminated address, says: "To represent the largest constituency in this country during the entire life of the present Parliament is a work which few people outside Parliamentary life can quite properly appreciate. But the member for Romford is a man who has devoted his great business capacity to the service of his constituency and of his country; his untiring and patriotic support of the war has been a wonderful example to all, and for this alone his constituents may well feel proud of him." Sir JOHN H. BETHELL, Bart., is one of the sons of the late Mr. GEO. BETHELL, who was for many years gardener to the late Sir GREVILLE SMYTH, of Ashton Court, Bristol.

RURAL WORK FOR DISCHARGED SERVICE MEN. Sir CHARLES WAKEFIELD, Bart., on the occasion of his installation as Master of the Worshipful Company of Gardeners, outlined a scheme for settling discharged soldiers and sailors on the land. He stated that two of the most difficult problems arising out of the war were demobilisation and food production, and these were capable of being dealt with in relation to each other. The State had already initiated a policy of settling discharged service men on the land, in the Small Holdings Colonies Act of 1916, but the action of the State would need to be supplemented by outside resources. In order to forward the movement he offered to present a sufficient number of acres to serve as the nucleus of such a colony. In addition to the cultivation of food stuffs, Sir CHARLES suggested that such a scheme might encourage such aids to the support of the smallholder as bee-keeping and rabbit breeding. The initial expenditure in bee-keeping was small, and with ordinary good fortune more than the whole outlay could be recouped in the first season. It was obvious that the more widespread practice of bee-keeping would have been invaluable in meeting the sugar shortage. Food for the rabbit would be obtainable at first hand from the garden refuse and the adjoining country lanes. The breeding and rearing of this prolific animal were now recognised as being the quickest means of producing good animal food. He added that it might be necessary, and the possibility must be borne in mind, to provide housing accommodation for the small-holders and their families. He saw no reason why, with the certainty of Government support to the small-holding movement in the organisation of markets, and in the intelligent distribution of market commodities, the colony should not speedily become self-supporting.

WAR ITEM. The Military Cross has been conferred on 2nd Lieut. J. E. CORRY, sixth son of Mr. WM. LONGMAN CORRY, of the firm of CORRY AND CO., agricultural and horticultural sundries merchants, Bedford Chambers, Covent Garden, and Shad Thames, London. 2nd Lieut. CORRY obtained his commission in June, 1917, in the 1st Batt. the Queen's Royal West Surrey, after passing through the Household Brigade Officers' Cadet Batt. School at Bushey, Hertfordshire.

HOME CORRESPONDENCE.

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

A BIBLIOGRAPHICAL CURIOSITY.—I have recently come into possession of a curious old volume on flowers, and am wondering whether any readers of the *Gardeners' Chronicle* can throw any light upon it. In size it is approximately 14 inches by 9½, and consists of 87

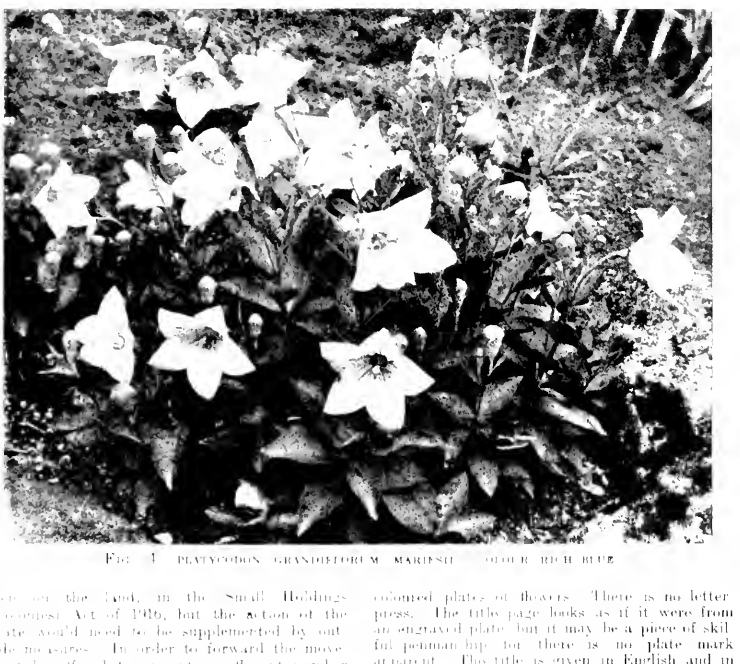

FIG. 4.—PLATYCODON GRANDIFLORUM MARIESII.—COLOUR RICH BLUE.

coloured plates of flowers. There is no letterpress. The title page looks as if it were from an engraved plate, but it may be a piece of skilful penman-ship, for there is no plate mark apparent. The title is given in English and in French as follows: *The English Flower Garden* ... *Le Jardin de Fleurs Anglois*. There is no date, or place of printing. On looking it through, the plates seemed to me to be familiar, and I was not long before putting my hand on the original. The plates are reprints of those in that very rare book, *The Compleat Florist*, 1730. The book probably contained the whole hundred illustrations, as every one of the 87 have been printed from, and can be identified with, those in *The Compleat Florist*. It is curious that in reprinting them for *The English Flower Garden* the original plates have had the engraved numbers and cultural matter blocked out, and there is the impress of the screen used for this purpose upon each plate. Whoever did it has written in all the name of each flower represented. A curious deceptive effect is given to these later productions by their being printed in brown ink, the originals being in black. Then to render the deception still more complete, most of the subjects illustrated in *The English Flower Garden*

are coloured quite differently from those in *The Compleat Florist*. The effect is very curious, but the whole fraud—for it is nothing more or less—can easily be ascertained by close examination and comparison with the original engravings. The order in which the plates appear has, of course, been entirely changed, hence another little barrier to create difficulty in recognition has been adopted. Perhaps Mr. W. Roberts, Mr. B. B. Brotherston, or some other bibliophile could throw light on this curiosity. *C. Harman Payne.*

TO PREVENT BEES SWARMING.—As one interested in bees, may I be allowed to refer to the notes by *Chloris* on preventing swarming, on p. 245? There is one most important detail omitted, and which must be carried out, otherwise the object in view will be defeated. Four or five days after supering, each of the frames of brood chambers that were raised above the queen excluder must be examined again for queen cells, and any found must be removed, or swarming will not be prevented. Only this week I examined two hives similarly treated, and on one frame found three queen cells, which, had they been allowed to remain, would have resulted in the old queen leaving the brood chamber, and other troubles. *E. Beckett, Fota Gardens, Queenstown.*

THE CAUSE OF THE APPLE FAILURE. *Market Grower*, on p. 243 suggests that the failure of the Apple crop is due to the brightness of the weather at blossoming time, causing the flowers to dry before they had all been pollinated by bees. Is not the failure due to the fact that the trees last year carried such enormous crops that they were weakened in consequence, and could not carry out nature's requirements properly in fertilising the blossoms? I noticed when the flowers expanded that they were weak and lacked the individual strength of those of the previous year. I feared the fruit would not set well, and the result confirms my earlier doubts. *E. M.*

LATE FROSTS IN SOMERSET.—During the past week we have experienced severe frost in this district. On the moors at Sharpham and Ashcott, between here and Bridgwater, maincrop Potatos to the extent of several acres have been badly damaged. On the 25th ult., Kidney Beans and Marrows were cut to the ground level and quite destroyed. Some plantations have almost entirely escaped damage, whilst others close by are practically ruined. Local growers are of the opinion that the King Edward Potato has withstood the frost better than Arran Chief. *Edward Carter, Abbey Gardens, Glastonbury.*

BEE STINGS.—Referring to your reply to *C. P.* on p. 266, I find that the simplest remedy and the most certain is a poultice of genuine honey. I am often stung, but suppose I am inoculated with the poison, as I never feel any pain beyond the prick. The above remedy will also give quick relief in the case of stings by gnats, mosquitos, and other insects. *Arthur Lewis, Sparrowswick, St. Albans.*

SOCIETIES.

ROYAL HORTICULTURAL.

Scientific Committee.

JUNE 18. — *Present*: Mr. E. A. Bowles (in the chair), Dr. A. B. Rendle, Messrs. J. W. Odell, W. C. Worsdell, W. Hales, E. J. Allard, and F. J. Chittenden.

The late Mr. R. Hooper Pearson.—The Chairman referred to the loss the Committee had sustained by the death of Mr. R. Hooper Pearson, whose wide knowledge and sound judgment had been of great value to the Committee. The Committee unanimously desired that their sincere condolences be sent to Mrs. Pearson and her daughter.

The Committee's Jubilee.—Mr. Bowles referred to the fact that fifty years had now elapsed since the formation of the Scientific Committee, the first meeting of which was held on April 20, 1868, and he brought a message of congratulation and thanks from the Council for the work done in the past, and their good wishes for the future. Of the original Committee only one member, Mr. J. G. Baker, F.R.S., remains alive.

Habenaria.—Dr. Rendle reported upon a plant of Habenaria chlorantha collected by Mr. Percy Bunyard at Woldingham as follows:—In the flowers sent the peculiarity is the multiplication of the fertile anthers. A number of pairs of pollen sacs are produced on the column successively inside the normal one. These all contain pollen, even the smallest ones having a few grains.

Silver Leaf in Apple.—Sir Harry Veitch sent branches of Apple Newton Wonder from East Burnham Park, the entire foliage of which showed the silvery appearance characteristic of the attack of Stereum purpureum.

Double Potentilla reptans.—Mrs. Colville sent a plant of Potentilla reptans with double flowers which she had found growing wild in Oxfordshire. Mr. Allard mentioned the occurrence of another double plant of the same species at Southwold.

Pollination of Mistletoe.—Mr. Bowles referred to the absence of knowledge concerning the flies which pollinate Mistleto, and said that he had captured several species at the flowers which had not all yet been named. Diptera appear to be the chief agents.

Change of Colour at Base of Tulip.—A letter drawing attention to a change in the colour of the base of the Tulip Eclipse was read from Messrs. Barr. When shown last year, the base of those grown under glass was much less defined than in those grown in the open, and the Tulips were considered distinct. This year, when bulbs from the two sources were grown side by side, the bases in both were alike, thus showing that the basal colour is not invariable, or independent of external conditions.

Lily from Saloniki.—Mr. Bowles showed flowers of a very dark form of Lilium Martagon from Saloniki, not of so dark a colour, however, as dalmaticum.

Mint.—Shoots of a Mint were sent from the Devon Medical Herb Industry. Plants were grown last year as Mentha viridis, some were transplanted, and this year shoots with very hairy foliage had appeared. Mr. Fraser recognised the shoots as those of Mentha sylvestris.

JULY 2.—At the meeting held at the Drill Hall, Buckingham Gate, on Tuesday last, there was a fair display of hardy flowers, Roses and Orchids, but there would have been a comparatively small show without the fine groups of Sweet Peas contributed by members of the National Sweet Pea Society. The Floral, Orchid, and Fruit and Vegetable Committees held short sittings, as very few novelties were presented for consideration. The Floral Committee recommended three Awards of Merit to novelties and awarded eleven medals for groups of flowers and plants. The attendance was satisfactory up to the luncheon hour, but small afterwards.

At the 3 o'clock meeting of the Fellows, Dr. E. J. Russell, of Rothamsted, gave a lecture on "Soil Making."

Floral Committee.

Present: Messrs. Henry B. May (in the chair), John Green, G. Reuthe, John Heal, J. T. Bennett-Poë, A. Turner, J. W. Moorman, C. Dixon, Chas. E. Pearson, W. P. Thomson, Jas. Hudson, E. H. Jenkins, Geo. Paul, E. A. Bowles, W. J. Bean, Sydney Morris, R. C. Notcutt, H. Cowley, W. B. Cranfield, J. F. McLeod, W. H. Morter, J. W. Barr, R. W. Wallace, A. G. Luckman and C. Elliott.

AWARDS OF MERIT.

Campanula Phyllis Elliott.—A charming little hybrid obtained by crossing C. excisa with C. arvatica (the presumed parentage of C. kewensis). The tiny basal leaves are ovate and toothed, while the stem leaves are linear. The flowers are borne stiffly erect, and there may be from one to four flowers on the wiry stems, but only a single bloom of each inflorescence is expanded at one time. The flowers are over three-quarters of an inch long, deeply lobed, and of a soft gentian blue colour. Shown by Mr. CLARENCE ELLIOTT, Stevenage.

Campanula kolenatiana.—This new Campanula promises to be a useful garden plant, as it has a good habit and is wonderfully free-flowering. A foot or less in height, the wiry, lispid stems bend slightly beneath the weight of the four or five large blooms produced at the top. The flowers are pendent, with recurving lobes, and the colour is deep porcelain blue, with darker shading on the lobes. The calyx and leaves are more or less hairy. The species is from the Caucasus. Shown by Messrs. R. TUCKER AND SONS, Oxford.

Escallonia edinensis.—This graceful hybrid was raised in the Edinburgh Botanic Gardens, hence its name. The small flowers are rose-pink and borne freely on the new growths, which are produced closely together all along the arching branches. The small, shining green leaves form a pleasing setting for the abundant blossoms. E. edinensis, like E. langleyensis, is derived from the Valdivian E. Philippiana crossed with the Chilian E. punctata, and the two plants are very similar in every respect save the shade of colouring, which appears to be deepest in E. langleyensis. Shown by Messrs. PAUL AND SONS, Cheshunt.

OTHER INTERESTING PLANTS.

Messrs. R. WALLACE AND CO.'s group of Eremuri attracted a great deal of attention, and the different shades of gold presented by the several forms of Eremurus Bungei were most pleasing; E. Olgae and E. Sir Michael were also included, as well as Iris aurea in fine form. Flowers of Lonicera tragophylla were to be seen in Mr. G. REUTHE'S group, where the Bee Orchis and the handsome Orchis foliosa were close companions. Messrs. WM. PAUL AND SON made a big show of their new Waltham Scarlet Rose; the new rose-red Hadley was conspicuous in Messrs. B. R. CANT AND SONS' exhibit of Roses; while Messrs. ALEX. DICKSON AND SONS showed their handsome K. of K. Rose, a brilliant velvety-crimson variety.

GROUPS.

Medals were awarded to groups as follows:—*Silver-gilt Banksian.*—Messrs. B. R. CANT AND SONS, for Roses. *Silver Flora.*—Messrs. R. WALLACE AND CO., for Eremuri; Messrs. ALEX. DICKSON AND SONS, for Roses; Mr. L. R. RUSSELL, for fine-foliaged trees and shrubs. *Silver Banksian.*—Messrs. R. TUCKER AND SONS, for Alpines; Messrs. H. B. MAY AND SONS, for Ferns and Hydrangeas; Messrs. WM. PAUL AND SON, for Roses; Mr. G. W. MILLER, for hardy flowers. *Bronze Flora.*—Mr. G. REUTHE, for hardy plants. *Bronze Banksian.*—Mr. CHAS. TURNER, for varieties of Philadelphus; Messrs. J. CHEAL AND SONS, for Star Dahlias in ten varieties.

Orchid Committee.

Present: Sir Jeremiah Colman, Bart. (in the chair), Sir Harry J. Veitch, Messrs. Jas. O'Brien (hon. secretary), Arthur Dye, J. Wilson Potter, W. H. White, R. A. Rolfe, William Bolton, J. Charlesworth, T. Armstrong, F. Sander, R. G. Thwaites, Frederick J. Hanbury, and C. H. Curtis.

AWARDS.

PRELIMINARY COMMENDATIONS.

Odontoglossum Jasper, Ashtead Park variety (crispum × amabile), from PANTIA RALLI, Esq., Ashtead Park, Surrey (Orchid grower, Mr. W. H. White).—A distinct form, approximating more closely to O. crispum, which is the leading factor in its ancestry, than any other hybrid of this cross yet shown. The large and finely formed flower is pure white with clusters of dark purple blotches in the middle of each segment; the lip has a yellow crest.

Odontoglossum Promerens Princess Mary (eximium × crispum), from Messrs. ARMSTRONG AND BROWN, Orchidhurst, Tunbridge Wells.—A model flower with pure white ground, the sepals having two broad, irregular bands of reddish-mauve colour and the petals a large blotch of reddish mauve in the centre; the well-developed lip has dark markings around the yellow crest.

GROUPS.

Messrs. ARMSTRONG AND BROWN were awarded a Silver Flora Medal for an excellent group of hybrid Orchids, with a few interesting species which included Anguloa Cliftonii and the rare Cypripedium Druryi. The best novelties were Odontoglossum Cynthia (eximium × Mars), a fine white, handsomely blotched variety; two

examples of a very delicately tinted type of O. eximillus, with strong spikes of light rosy-lilac flowers; and Laeliocattleya Aeis Queen Mary (Mendelii × tenebrosa), with pretty, pure white flowers having pink labellums with chrome-yellow disc.

Messrs. CHARLESWORTH AND Co. were awarded a Silver Flora Medal for a fine group in which forms of Miltonia Charlesworthii were the principal feature. New hybrids shown were Odontioda Lyra (Odm. Jasper × Oda. Royal Gem) and Odontioda Lorna (Oda. Lambeauiana × Odm. Olympus), both of good quality. The group included a plant of the rare Cirrhopetalum pulchrum var Cliftonii, with a fine umbel of cream-white flowers spotted with dark rose.

Fruit and Vegetable Committee

Present: Messrs. Joseph Cheal (in the chair), E. A. Bunyard, W. H. Divers, Edwin Beckett, W. Bates, P. D. Tucker, Owen Thomas, A. Bullock, J. C. Allgrove, and Geo. Relf.

AWARD OF MERIT.

Melon Acquisition.—This Melon is scarlet fleshed, of good flavour, and has a handsome and closely netted skin. Shown by Mrs. B. B. Fox (gr. Mr. E. A. Hall), Brislington House, Bristol.

NATIONAL SWEET PEA.

JULY 2.—The National Sweet Pea Society held an exhibition on this date in conjunction with the Royal Horticultural Society's meeting, and provided a far finer display than in 1917.

The Floral Committee examined seven novelties and made descriptive records of new varieties for the purpose of keeping the classified lists as complete as possible. The General Committee met at 12.30, and many well-known amateur and trade growers were present.

No classes were provided and no prizes offered, but members had been invited to send blooms. All things considered, the response was excellent. Mr. W. H. HOLLOWAY, Post Hill, Shrewsbury, had by far the finest display which consisted of two dozen bunches of well-grown flowers. Lady Miller, President, Agroona Beryl (a lovely pink), Golden Glow, Warrior, Liberty, Prince George, Audrey Crewe, and Lord Evelyn were a few of the varieties shown. The group which thoroughly merited the Large Gold Medal awarded. Messrs. DOBBIE AND Co. set up a few of their novelties, notably Mrs. J. Jones (deep mauve), and an unnamed seedling akin to Elegance (Gold Medal: Elegance and Mr. J. W. Bishop were the only two varieties shown by Messrs. ALLAN DICKSON AND SONS, but they were represented by numerous large stands and vases of first-rate blooms. (Gold Medal.)

Fiery Cross, Royalty, a cream-ground form of Rosabelle, and Gladys, a new silvery-blue variety, were contributed by Messrs. E. W. KING AND Co. (Silver-gilt Medal). HOWARD S. BUTTON, Esq. (Berries, Duck's Hill, Northwood (gr. Mr. George Herbert), sent a score of bunches of the best varieties (Silver-gilt Medal). Mr. ROBERT BOLTON sent a few flowers of new varieties, the most striking of which was a unnamed cream-ground variety with heavy rose-pink flushings on the back of the standard.

Other exhibitors were Mr. R. SANDFORD, Barton Mills, Suffolk (Silver Medal); Mr. S. F. CURTIS, Wingate Lane Road, Lancaster, who had an interesting seedling of the Olive Ruffel type named Devotion; Mr. G. J. E. PRYOR, Preston Hitchin (Silver Medal); Mrs. FARNHAM (Silver Medal); Mrs. W. H. HOLLOWAY, Shrewsbury (Silver Medal for a decorative vase); Mrs. REID, Bedford (Silver Medal for an épergne); Mr. WORTHINGTON (Bronze Medal); Mr. BARKER (Bronze Medal); Mr. LOUGHTON, Ashford, Middlesex; Mr. J. STEVENSON, Poole Road, Wimborne, who showed his fine variety Liberty and a new rosy mauve variety named Hallo; Dr. HINTON, Heytesbury; and Mr. DAVIS, Ilford.

UNITED HORTICULTURAL BENEFIT AND PROVIDENT.

JUNE 10.—The monthly meeting of this Society was held in the R.H.S. Hall on Monday, the 10th ult., Mr. C. H. Curtis in the chair. Two new members were elected. The Army forms of the late Sergt. F. Harris and Pte. M. Whiting were received, and the sum of £21 0s. 8d. was passed for payment to their respective nominees. One lapsed member was allowed to withdraw £10 10s. from the funds. The sick pay for the month on the Ordinary side amounted to £74 8s. 3d., State Section £18 10s., and Maternity Benefits £7 10s. The treasurer stated that the trustees had invested a further sum of £500 in War Bonds, and had a balance in hand of £318 2s. 6d.

CROPS AND STOCK ON THE HOME FARM

FALLOWS.

THE recent weather is all in favour of cleaning vacant land where Couch is prevalent. Continuous ploughing, dragging, rolling and harrowing of the land, and collecting the dried Couch with chain harrows, afterwards burning it in small heaps on the land, should leave but little weed in the soil. If the Couch is not removed now there may not be a chance to do so later. Where Swedes and Turnips are to occupy the land, these crops to be followed by corn, the ground should be thoroughly cleaned.

MANGOLD.

OWING to the unusual ravages of the Turnip fly this crop is patchy in some areas. Where the early plants have been thinned and kept free from weeds the crop is growing satisfactorily. Any late pots should be thinned at once. The drills are usually made 18 inches apart, and the plants in the rows should be thinned to about 15 inches asunder. There is a difference of opinion amongst growers as to which method—a thin or medium plant—produces the heaviest yield of roots. Some contend that a thin plant enables the roots to grow larger, while others are of the opinion that a medium sized root, obtained by giving less space, produces the greater bulk of roots. I am of the latter opinion, and think also that the roots are of superior quality, containing more saccharine and nutritious matter than large specimens. After thinning the plants hoe the ground and the soil to the depth of 1 inch at the rate of 1 cwt. per acre and repeat the dressing a month later. Keep the surface well stirred in dry weather and hoes to admit air to the soil and check the growth of weeds.

RENOVATING PASTURES.

The existing spell of dry weather has reduced to a minimum the grass in ridged pastures, which in fact has also reduced the quantity of milk. Where possible I put me thin lots been fed hard should be rested. After spreading the cow dung, and clearing off such weeds as ragwort and thistles, sow 1 cwt. per acre of sulphate of ammonia [illegible].

SUMMER FALLOW AND WHEAT.

As a preparation for Wheat, what is known as a summer fallow is one of the best of methods for ensuring success. This probably is one of the oldest practices in existence, and still one of the most certain of success when properly carried out. Summer fallowing means allowing the ground to lie idle, or free from a crop for several months, in the meantime ploughing it several times, thoroughly disintegrating every particle and exposing the surface to the influences of the weather. The absence of a crop leaves the soil with a full quantity of nitrogen stored ready for the next season's growth of Wheat. The exposure of the soil sets free the humus it contains. Farmyard manure added at the rate of 20 tons per acre previous to the last ploughing at the end of September will provide the soil with all the nutriment necessary to produce a full crop of high class Wheat the following season provided of course the weather is propitious.

Summer fallowing possesses the advantage of cleansing soil from weeds if the various details of ploughing, harrowing, and the burning of Couch are carried out judiciously.

For example take a field of Swedes eaten off in March or April by sheep, foul with Couch, Docks, Thistles, Camomile, or Tussilago Farfara (Colt's Foot). The constant ploughing from April onwards, always during dry weather, will thoroughly eliminate these weeds, and a clean plot can be assured by the time for sowing the Wheat. *C. Molyneux.*

Obituary.

ABRAM VALLANCE.—The death occurred on Thursday, June 20, at his residence, Bexwell Road, Downham Market, of Mr. Abram Vallance, formerly of the firm of Messrs. Bird and Vallance, nurserymen and seedsmen, Downham Market. Mr. Vallance had been in failing health for some time past.

DAN MELLUISH.—Mr. Dan Mellish, one of the oldest horticulturists in Bath, died at Bath on June 20, on his 87th birthday. He was born at Batheaston in 1832, the son of Mr. James Mellish, and was apprenticed to Mr. Ambrose Minty, of Bailbrook Gardens. Later he became gardener to Mr. James Chaffin, and laid out the grounds at Charlcombe Grange. He was a successful exhibitor, and won many prizes. When his old chief, Mr. Minty, died, in 1885, Mr Mellish succeeded him at Bailbrook.

MATTHEW CRAWFORD.—Matthew Crawford, known as the "Gladiolus King" of Ohio, and prominent for many years as a Strawberry specialist, died recently at his home in Belle Center, U.S.A., after a three days' illness following an attack of pneumonia. He was 79 years of age. Deceased was born in County Antrim, Ireland, and following the death of his father, he went to America when ten years of age, accompanied by his mother and younger brother. In 1856 Matthew Crawford engaged in market gardening, and since that time until his death he made horticulture his life work. In 1876 he began making a specialty of Strawberry plants, and a few years later became well known as a successful grower of Gladiolus bulbs. He had grown as many as two million bulbs in one year, which he supplied to the markets, and also made large shipments of flowers during the season. Among his best known works is *The Book of Gladiolus*, written by him in 1911, in collaboration with Dr. Van Fleet.

TRADE NOTES.

THE FRUIT ORDERS.

A STRONG protest is being made by traders in Scotland against the recent Fruit Orders of the Food Controller. The president and secretary of the Edinburgh and Leith Fruit and Flower Trade Association have protested against the Order commandeering soft fruit. The president and secretary of the Edinburgh Wholesale Fruit Merchants' Association also take strong objections to the Order, especially as regards Strawberries. They point out that the Scottish crop being later than the English one, the growers in Scotland have been placed in a worse position than those in England, as the latter had sold much of their crop before the Order was issued.

FRENCH BULBS.

IT does not appear to be generally known among traders that the British Customs authorities now hold a general licence for the admission of bulbs from France. The bulbs must be of French origin, otherwise importation will not be permitted. On paper it is a fairly easy matter to place orders for French bulbs, but it is quite another matter for the French grower to convey his goods to the seaport, while transport from France to England is a big obstacle in the way of their speedy transmission to the British buyer.

CO-OPERATIVE FRUIT MARKETING.

THE sales for the past year of the Pershore Co-operative Fruit Market amounted to £81,857, being an increase of £35,905 over the previous year, while the profit realised was £3,042. The committee recommended a bonus of £3 15s. per cent. to shareholding growers in proportion to the value of their produce marketed.

ENQUIRY.

CHALK AS FUEL.—It has been stated that chalk can be made use of as fuel, and it would be interesting to have the experience of those who have tried this material for the purpose. *T.*

MARKETS.

COVENT GARDEN, July

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 average for the week preceding the date of our report. The prices depend upon the quality of the samples, the way in which they are packed, the supply in the market, and the demand, and they may fluctuate not only from day to day, but occasionally several times in one day.—EDS

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

(All 48's, per doz. except where otherwise stated).

	s. d.	s. d.
Aralias	7 0– 8 0	
Araucaria excelsa ...	7 0– 8 0	
Asparagus plumosus ...	10 0–12 0	
— Sprengeri ...	9 0–10 0	
Aspidistra, green ...	32 0–42 0	
Crassulas, various	18 0–21 0	
Erica magnifica ...	24 0–30 0	
— persoluta ...	36 0–42 0	
Fuchsias, various ...	12 0–15 0	
Heliotropes ...	12 0–15 0	
Hydrangeas, white, pink, blue ...	15 0–24 0	
— — (specimens), each	4 0–10 0	
Marguerites, white	9 0–10 0	
Mignonette ...	12 0–15 0	
Roses, polyanthus ...	24 0–30 0	
— rambler (each) ...	5 0–12 0	
Verbena, Miss Willmott	8 0–10 0	
— — 60's	4 0– 6 0	

Ferns and Palms: Average Wholesale Prices.

	s. d.	s. d.
Adiantum cuneatum, 48's, per doz.	9 0–10 0	
— elegans ...	9 0–10 0	
Asplenium, 48's, per doz.	9 0–12 0	
— 32's	21 0–24 0	
— nidus, 48's ...	10 0–12 0	
Cyrtomium, 48's ...	10 0–12 0	
Nephrolepis, in variety, 48's ...	12 0–18 0	
— 32's	24 0–36 0	
Pteris, in variety, 48's	9 0–12 0	
— large 60's ...	4 0– 5 0	
— small 60's ...	3 0– 3 6	
— 72's, per tray of 15's	2 0– 2 6	

Cut Flowers, &c.: Average Wholesale Prices.

	s. d.	s. d.
Achillea The Pearl, per doz. bun. ...	9 0–12 0	
Alstromeria, per doz. bunches..	9 0–12 0	
Arums— — (Richardias), per doz. bl'ms.	9 0–12 0	
Carnations, per doz. — blooms, best American var.	2 0– 3 6	
Coreopsis, per doz. bunches ...	3 6– 4 0	
Cornflower, blue, per doz. bunches	2 0– 2 6	
— pink, per doz. bunches ...	2 6– 3 0	
Croton leaves, per bun.	1 3– 1 6	
Daisies, large white, per doz. bun ...	3 0– 4 0	
Delphiniums, various, per doz. bun	6 0– 9 0	
Gaillardia, per doz. bunches ...	4 0– 5 0	
Gardenias, per box (12's)	4 0– 5 0	
— (18's)	2 0– 3 0	
Gladiolus Brenchleyensis, scarlet, per doz. spikes ..	4 0– 5 0	
— Fairy Queen, per doz bunches	30 0–36 0	
— white, per doz. bunches ...	18 0– 4 0	
Gypsophila, pink, per doz. bunches	6 0 —	
— white, per doz. bunches ...	9 0–12 0	
Heather, white, per doz. bun....	9 0–12 0	
Iceland Poppies, per doz. bunches	3 0– 4 0	
Iris, Spanish, per doz. bunches— — white	15 0–18 0	
— blue	12 0–15 0	
Iris, con— — yellow	15 0–18 0	
— mauve	12 0–15 0	
Lapagerias, per doz. blooms ...	3 0– 4 0	
Lilium longiflorum, long ...	15 0 —	
Marguerites, yellow, per doz. bunches	4 0– 5 0	
Nigella, per doz. bunches ...	3 0– 4 0	
Orchids, per doz.: — Cattleyas ...	10 0–12 0	
Pelargoniums, double scarlet, per doz. bunches ...	6 0– 8 0	
— white, per doz. bunches ...	5 0– 6 0	
Pinks, Her Majesty, per doz. bunches	10 0–15 0	
— Mrs. Sinkins, per doz. bunches	4 0– 6 0	
Roses, per doz. blooms— Fran Karl Druschki ..	1 6– 2 6	
— Ladylove ...	3 0– 4 0	
— Liberty ...	3 0– 4 0	
— Madame Abel Chatenay ..	3 0– 3 0	
— Niphetos ..	1 6– 2 6	
— Richmond ..	2 6– 3 0	
— Sunburst ...	2 6– 3 0	
Scabiosa caucasica, per doz. bunches	5 0– 6 0	
Statice, white, mauve, yellow, per doz bunches ...	10 0–12 0	
Stephanotis, per 72 pips ...	3 0– 4 0	
Stock, English, per doz. bunches ..	12 0–18 0	
Sweet Peas, various, per doz. bun ..	4 0– 8 0	
Viola cornuta, per doz. bun. ...	2 6– 3 0	

Cut Foliage, &c.: Average Wholesale Prices.

	s. d.	s. d.
Adiantum (Maidenhair Fern) best, per doz. bun...	6 0– 8 0	
Asparagus plumosus, long trails, per half-dozen	2 6– 3 0	
— — medium, doz. bunches	18 0–21 0	
— Sprengeri ...	10 0–15 0	
Berberis, per doz. bun.	6 0– 8 0	
Carnation foliage, doz. bunches...	4 0– 5 0	
Cycas leaves, per doz.	3 0– 6 0	
Ivy leaves, per doz. bunches ...	2 0– 2 6	
Moss, gross bun...	7 0– 8 0	
Smilax per bun. of 6 trails ...	2 6– 3 0	

REMARKS.—There is still a shortage of white flowers, and prices remain high for Achillea, double white Stock, and white Pinks. Many good varieties of Delphiniums are on sale. There is a good supply of Gypsophila elegans, which is arriving in good condition. Sweet Peas are also good and sufficient for the demand, but prices remain firm. Spanish Irises are practically finished for this season. Roses continue fairly plentiful. The best sorts offered are Mme. A. Chatenay, Molly Sharman Crawford, Fran Karl Druschki, Melody, Ophelia, Liberty, and Sunburst. The latest arrivals are Alstromeria and scarlet Gladiolus Brenchleyensis. Foliage now consists of Asparagus plumosus, Asparagus Sprengeri, and Adiantum Fern. Smilax is not being grown in very large quantities, and the consignments are very irregular.

Fruit: Average Wholesale Prices.

	s. d.	s. d.
Cherries, per ½ bus.	25 0–60 0	
Figs, Worthing, per doz	5 0–15 0	
Grapes:— — Black Hamburgh, per lb	2 6– 5 0	
— Muscats per lb.	3 0– 6 0	
Lemons, per case ...	50 0– 70 0	
Melons (each) ...	2 0–10 0	
— Cantelope (Continental)	20 0–30 0	
Nectarines, per doz	6 0–18 0	
Oranges, per case	60 0–110 0	
Peaches, per doz ..	6 0–24 0	
Nuts:— — Almonds, per cwt. ...	180 0 —	
— Barcelona, per cwt. ...	170 0 —	
— Brazils (new), per cwt. ...	280 0 —	
— Walnuts, kiln dried, per cwt	110 0 —	

Vegetables: Average Wholesale Prices

	s. d.	s. d.
Artichokes, globe, per doz. ...	4 0– 9 0	
— Jerusalem per ½ bus. ...	2 6– 3 0	
Beans:— — broad, per bus.	8 0–10 0	
— French (Channel Islands), per lb.	1 6– 2 0	
Beetroot, per cwt	6 0– 8 0	
Cabbage, per doz	3 0– 6 0	
Carrots, new, per doz. bunches ...	4 0– 6 0	
— per bag ...	13 0–15 0	
Cauliflowers, per doz	6 0–10 0	
Cucumbers, per flat (from 24 to 44)	18 0–22 0	
Garlic, per lb. ...	1 0 —	
Greens, per bag ...	3 0– 5 0	
Herb, per doz. bun.	2 0– 4 0	
Horseradish, per bun.	3 6– 4 6	
Leeks, per doz. bun.	4 0– 6 0	
Lettuce, Cabbage and Cos, per doz	0 6– 2 0	
Mint, per doz. bun.	4 0– 6 0	
Mushrooms, per lb.	1 6– 3 0	
Mustard and Cress, per doz. punnets	1 0– 1 3	
Onions, Egyptian, per cwt. ...	60 0–65 0	
— spring, per doz. bun. ...	8 0– 9 0	
Parsley, per bus. ...	4 0 —	
Peas, English, per bus.	6 0–10 0	
Radishes, per doz. bunches ...	2 0– 2 6	
Rhubarb, per doz. ...	8 0–12 0	
Shallots, per lb.	0 10– 1 0	
Spinach, per bus....	6 0– 6 6	
Tomatos, per doz. lb. ...	12 0–14 0	
Turnips, new, per doz. bunches...	4 0– 8 0	
Vegetable Marrows, per doz. ...	7 0–12 0	
Watercress, per doz	0 10– 1 0	

REMARKS.—Trade in fruit is limited in consequence of the outdoor soft fruits being required for preserving. Glasshouse fruits are therefore in better demand, the principal items of which consist of Grapes (Black Hamburgh and Muscat of Alexandria), Peaches, Nectarines, Figs, Melons, and Cherries. Some fine samples of Sicilian Oranges are on offer. Tomatos and Cucumbers are more reasonable in price. Peas and Broad Beans are plentiful. Supplies of Cauliflowers, Cabbages, and Dwarf Beans are limited. Mushrooms are, as usual at this time of year, limited in supply. *E. H. R., Covent Garden Market, July 3, 1918.*

GARDENING APPOINTMENTS.

MR. S. WREN, late Gardener to D. LIONEL THOMSON, Esq., Temple House, Waltham Cross, Hertfordshire, as Gardener to Sir GUY SEBRIGHT, Cheverells, Dunstable. (Thanks for 2s. 6d. for the R.G.O.F. box.—EDS.)

MR. F. A. BUSH, late Foreman at Bowood Park, Wiltshire, as Gardener to Sir IAN H. AMORY, Knights hayes Court, Tiverton, Devonshire, during the absence of Mr. Johnston on Army service.

ANSWERS TO CORRESPONDENTS.

"FROG SPIT".—*Hillyfield.* The frothy substance on your plants is caused by the insect variously named Frog Hopper, Frog Spit, and Cuckoo Spit (Aphrophora spumaria). The plants can be cleared of the insects by brushing off during sunshine the protective "froth," without which they cannot live. Another method is to syringe the plants with lukewarm nicotine or Quassia extract; if the former is used, it should be washed off the plants with clear water about an hour after application.

HYDROCYANIC ACID GAS: *A. B. H.* It will be quite safe to fumigate the house where there are ripe fruits of Tomatos and Cucumbers, but it would be well to wash the fruits before use if they are required very soon after the fumigation.

MUSCAT OF ALEXANDRIA GRAPES: *L. G.* The berries are "scalded," the cause being excessive warmth during the stoning stage. They will not scald while the shaded temperature does not exceed 80°, but if it rises to 90° scalding is almost certain to take place. The stoning period lasts about four weeks, during which time there is no expansion of the berries, and the most critical time is during the latter half of this period. Let the vinery be amply ventilated, and sprinkle water on the floors and walls during the hottest part of the day to promote atmospheric moisture. Sometimes it may be necessary to have recourse to temporary shading during midday, but this should be avoided if possible. As soon as the second swelling commences all danger will be past, and a maximum temperature of 90°, if combined with general good treatment, will then do the vines or bunches no harm.

NAME OF PLANT: *E. Taylor.* Scilla indica, Baker, at one time named Ledebouria hyacinthina, Roth. See *Botanical Magazine*, t. 3,226. After flowering the soil should be allowed to dry out gradually, and the plant fully exposed to sunshine for some weeks. Most or all of the foliage will die down, after which you should separate the bulbs and repot them in moist soil. After one good watering spray or lightly syringe the bulbs twice a day till fresh growth commences, when you can begin watering again, increasing the supply of moisture as the leaves get freely into growth.

POTATO LEAVES DAMAGED: *B. & Sons.* The marks on the Potato leaf are apparently not due to any attacks from insects or fungi; they are probably the result of unfavourable weather conditions.

POT PLANTS SUITABLE FOR USE INDOORS: *J. B.* A variety of Primulas are suitable for room decoration. The stellata varieties of Primula sinensis are especially valuable, as they have a wide range of colour; Primula obconica, P. kewensis, P. malacoides and P. verticillata are all suitable, and can easily be raised from seed. Begonias of the Gloire de Lorraine type are useful; the newer Mrs. Paterson is especially fine, as its coloured foliage lights up beautifully under artificial light. Among zonal and show Pelargoniums there is a wide range of colours, and in light, airy positions the flowers last well. Hydrangeas, of which there are many choice varieties, are very valuable for their lasting properties; Saintpaulia ionantha is always a favourite plant. Cyclamen are invaluable in their great variety of colours, Achimenes, Gesnera or Naegelia, and Clerodendron fallax are also serviceable in their season. The smaller Acacias, such as A. Drummondii, A. platyptera and A. hastulata; Boronias and various Ericas are deserving of consideration, but their growth is considered too slow and difficult by the present-day cultivator. The following is a list of plants that can be grown annually from seed, and their flowering covers a wide season. If grown cool and sturdy the plants are all suitable for house or room decoration:—Acroclinium, Antirrhinum (intermediate varieties), Browallia elata (blue and white), Campanula pyramidalis (blue and white), Celosia plumosa, Cinerarias (especially the intermediate star varieties), Clarkia elegans (in several varieties), Godetias (especially the tall double forms), Larkspurs (Stock-flowered varieties), Mignonette, Nemesia strumosa Suttonii Rhodanthe, Salvia splendens (using one of the best dwarf forms), Statice Suworowii, Schizanthus Wisetonensis, Stocks of the intermediate type, such as East Lothian, also the taller Beauty of Nice type; Trachelium coeruleum, and double Wallflowers. Hippeastrums are easily raised from seed and are very handsome for house decoration; Clivias are also very suitable, as are such bulbous plants as Freesias, Narcissus, Tulips, and several Liliums. *The Greenhouse: Its Flowers and Management*, by H. H. Thomas, price 1s. 6d., and *The Book of The Greenhouse*, by J. C. Tallack, price 3s., would be suitable works for your purpose. They may be obtained from our Publishing Department: the prices include postage.

RHODODENDRON EATEN: *G. F.* The insect causing the damage is the Rhododendron bug, Stephanitis rhododendri. It is prevalent in the Woking area, and has been found at Sevenoaks, but nowhere else. It can be controlled in nurseries by spraying with paraffin emulsion now, while the insect is in the nymphal and larval stages.

WEED IN POND: *W. H. W.* The weed you submit to us is Lemna minor, the lesser Duckweed. You should skim it off the surface, and introduce goldfish into the pond, as they will eat the weed. Ducks would, of course, do the same, but they might injure the rock plants.

Communications Received. Southend—R. A. M.—C. H. S.—E. M. B.—G. B. G. H.—W. W.—H. J. E.—Mrs. M. W.—A. S—R. W. E.—W. I.—Vitis—W. J. W.

THE
Gardeners' Chronicle
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CONTENTS.

ILLUSTRATIONS.

FRUIT PRESERVING WITHOUT SUGAR.

MANY growers are concerned that their surplus fruit may be wasted this season owing to a shortage of sugar for jam-making. Yet there are many easy methods of preserving fruit without sugar. The reason why fruit "goes bad" is that it falls a prey to various living micro-organisms, especially bacteria, yeasts, moulds and their spores, all of which may conveniently be included in the popular term "germs." To preserve any food, it must be sterilised—i.e., freed from all germs, and then be kept so that no others can attack it.

When fruit is kept in cold storage, micro-organisms are prevented by the low temperature from developing, and therefore the fruit keeps good for a long time. The germs, however, are not killed, and as soon as the temperature rises they regain their normal activity and cause the produce to decay. Refrigeration is, therefore, only a temporary measure of preservation. Drying is also only temporary in that, if the produce be allowed to become moist again, decomposition will soon set in. While dry, however, fruit and other perishable foods are not suitable media for the growth of germs owing to the tendency for water to be extracted from the living organism by the dried tissue of the fruit. The fungus, therefore, loses water in this way, and if not actually killed, will, at any rate, be unable to thrive so long as the dried produce is well stored in a dry place. When the necessity for these precautions is realised, drying is a good and very simple method of preserving fruit or vegetables, and can be practised by those who have no special apparatus. Suitable trays can easily be made by stretching strong cheese-cloth, canvas, wire gauze, or other porous material across a wooden frame of suitable size to fit the oven. The fruits or vegetables to be dried should be spread out evenly on the trays, which may be placed in the sun by day and in a cool oven with the door open by night. Drying is best done intermittently, so that moisture from inside the fruits or vegetables has time to diffuse out before the skin becomes too dry. It must be continued until moisture cannot be squeezed from a cut surface of the produce in process of drying, which must not be carried to such a degree as to cause the fruit to become brittle. On no account must the produce be charred or scorched, as it may be if the temperature is allowed to rise above 160° F., for then it would change chemically and be incapable of regaining its usual form when soaked in water. Perhaps drying is most successful in the case of Apple rings (⅛ to ¼ inch thick), Plums or Damsons to form Prunes, Grapes for Raisins, and vegetables such as Peas and Beans, in addition to herbs so universally prepared in this way.

For some purposes sterilisation is often effected by disinfectants or antiseptics. Many such substances are more or less powerful poisons, and consequently unsuitable for using with foods. Some of the weaker antiseptics do nothing worse in this respect than upset the digestion to a greater or lesser extent, and are therefore not desirable, neither are they necessary. The least objectionable antiseptic from this point of view is sulphur dioxide, which, being a gas, may be driven off again by heating, and is sometimes very useful in helping to sterilise ordinary jam jars.

By far the best method of sterilising food of all sorts is by heat. The organisms which attack fruit are all killed before the temperature of boiling water (212° F.) is reached. They may be weakened and finally destroyed at a temperature so low as 150° F. to 170° F., provided it is maintained for a sufficiently long time.

This method of sterilising is made use of in canning and bottling. The great difficulty in preserving in ordinary bottles is to close them so that, after all spores and germs have been destroyed inside, no others can gain an entrance. This can only be done by the most meticulous attention to details. It must be remembered that, however clean the hands, cloths, table, etc., may appear they are never really sterile. Even the cleanest looking bottle or its lid may be covered with germs, which will grow and multiply rapidly if supplied with any suitable medium as food. In fact, after sterilising a bottle of fruit, it is essential that no part of the inside of the bottle be touched by any unsterilised body, nor must it be covered by anything that is not sterile. If allowed to remain open for many minutes the contents are liable to be infected from the air. The best way to secure perfect sterility is to sterilise the container after the food has been put in and hermetically sealed. This is the method by which modern canning in tin cans is carried out, and when once perfect sterility has been secured in an airtight container, the contents will theoretically remain good for ever. The process of canning is simple. A can of suitable size is packed with fruit as tightly as possible, filled with boiling water, the lid soldered on, and the can, together with the contents, sterilised in steam or boiling water, the time necessary for this process being 10 to 30 minutes, according to the softness of the fruit. The can may be immediately afterwards plunged into cold water to prevent overcooking. If boiling water is not available for filling, cold water may be used, but this makes the subsequent operations somewhat longer.

The superiority of canning over bottling is due chiefly to two facts. In the first place, as there is no risk of cracking, tin cans may be dealt with very rapidly by plunging them into boiling water and afterwards into cold; this makes it possible to deal with a glut of fruit, since three or four girls may deal with as many as 600 3-lb. cans a day. Secondly, cans may be sterilised after hermetically sealing, whereas bottles must be left open throughout this process, and consequently the contents lose flavour, and may subsequently become infected while being closed. However, many people have not yet surmounted an inherent and quite unjustifiable prejudice against tinned foods, and others will probably decide to manage with the bottles they already possess. If these bottles are the patent, so-called, vacuum ones, all should be well, but if ordinary jam-jars have to be used, detailed information as to the best methods of sealing should be obtained. For those with no suitable boiler, the oven method is probably best, and the following procedure is recommended for soft fruit: Take the number of clean vacuum jars required, and also a few extra receptacles, such as jugs. Fill all with clean fresh fruit and stand them on folded paper or cardboard in a moderately hot oven. In about half an hour the fruit will be found to have sunk down in its own juice. During this preliminary heating it is usual to cover the vacuum jars with their lids, which will thereby also be sterilised, but the rubber rings should not be heated for so long owing to their liability to perish. Take out the jars one at a time, fill up with fruit from one of the extra receptacles, dip the rubber ring in boiling water, place in position, and adjust the lid. If the screw type of bottle is being used, the cover must only be screwed loosely so that there is still an outlet for any expanded gases on reheating. Each jar should be put back into the oven for about fifteen minutes to re-sterilise, and on removal should be at once screwed down tightly so that no air can possibly enter. If done successfully, the contents will keep good for so long as the rubber ring lasts, which will probably be three or four years, the ring being the only perishable part of the container. Fruit preserved in its own juice by this process, often called pulping, is much better for tarts, etc., than that to which water has been added, and a far larger quantity may be preserved in one receptacle. It may be easily heated, with a little water and sugar, as available, to make jam. There is no necessity to add the large amount of

sugar that was used in pre-war days; in fact, the flavour of jam is better if less than ¾ lb. of sugar to 1 lb. of fruit is used. When sugar was cheaper than fruit large quantities of the former were used, and this custom certainly had the advantage that in raising the density and osmotic pressure of the jam a medium was produced in which there was much less tendency for germs to develop than there is in a juice with the consistency of water. However, if jam is well sealed while hot, there is no difficulty about its keeping, however little sugar it may contain.

In conclusion, it should be pointed out that it is always well to keep "preserves" in a place readily accessible, so that they may be examined from time to time, for, owing to the fallibility of human actions and the persistence of germs, it is possible that an occasional jar may require to be re-sterilised or used at once. *H. Goodrich.*

and so have Strawberries. French Beans, so largely grown round Paris, are at a standstill, and it is doubtful whether they will flower and set their pods.

On the other hand, the dry weather has greatly favoured the pollination of flowers, and many plants which are poor seeders in a normal season are carrying an abundance of fruits, and especially is this the case with bearded Irises. The temperature has kept below the average, and in some low-lying districts it fell almost to freezing point at night about June 20. In the south-west of Paris, where fruit trees are largely grown, there will be hardly any Cherries, no Peaches, no Plums, and very few Pears and Apples. Were it not for the half-crop of Strawberries and a good crop of Red Currants there would have been no fruits at all in a district where hundreds of tons of fruit are produced almost every year. *S. Mottet.*

[Photograph by E. J. Wallis.

FIG. 5.—FLOWERING BRANCH OF DAVIDIA INVOLUCRATA.

FRENCH NOTES.

THE WEATHER AROUND PARIS.

THIS is a very poor season. After late frosts had destroyed the flowers of most fruit trees, and scarred the young growth of many Conifers, the beetle called "Lisette" destroyed half the flowers of Strawberries.

Dry weather set in about the middle of May, and since that time very few showers have fallen. Seedlings and annuals are suffering wherever watering has not been attended to. In fields, heavy soil is cracked, just as it is usually at harvest time. Spring Wheat has suffered, and is very short in the straw, and it is interesting to note that "rust" has developed upon some varieties, as much as, if not more than, in a wet season. Potatos look well, but need moisture. The early varieties have ceased growing, and the tubers are small and late. Potatos are not flowering here more than in normal years, but they may fruit more freely than usual; the fruits should be removed, as they are very exhaustive of the plant's energies. Disease is making its appearance upon some varieties of Potatos, notwithstanding the drought and total absence of night dews. Early Peas have all cropped together,

HARDY FLOWER BORDER.

MORINA LONGIFOLIA

OF the ten or twelve species of Morina only M. longifolia, M. persica (syn. Wallichiana), and M. Coulteriana, are common in gardens. Of these, by far the best known is the first-named, a capital and highly ornamental border flower, differing in its general aspect from almost any plant in bloom at the same time, and adding considerably to the attractiveness of the garden. It has long, ornamental, Thistle-like leaves, and tall spikes of flowers in whorls, from which it is known as the Whorl Flower. Apart from the whorled arrangement, which is pretty in itself, the individual flowers are of much charm. They have long tubes, and the blossoms open in succession; the flowers are white when they first expand, and pass off in various shades of rose. The plant grows from 2 to 3 feet high; it flowered here this year towards the end of May, and will last in bloom throughout June and into July. Of the other species in cultivation, M. persica is the one I know best, although I have seen M. Coulteriana. I do not think that those who possess M. longifolia need care much whether they possess the others or not. They seem to be slightly dwarfer. M. longifolia is not exacting respecting soil, but prefers a rather deep, moist medium. It thrives well in sun. It is not a plant which transplants well when large. Young plants are inexpensive, and seedlings can be raised still more cheaply, but fresh seeds should be sown. When the plant is not in bloom it has a resemblance to a Thistle, and may be destroyed as a weed by an inexperienced person. *S. Arnott, Maxwelltown, Dumfries.*

DAVIDIA INVOLUCRATA.

WE may now look upon Davidia as an established garden tree in this country, for, although when first introduced it was thought to be too tender for our climate, and was planted in the Himalayan section of the Temperate House at Kew, it has since proved as hardy as the Crimean Lime, which it resembles in some respects. All the same, the tree under glass at Kew is healthy and floriferous, the conditions provided for Himalayan Rhododendrons being evidently to its liking, as it has thriven splendidly since it was planted there in 1904. It was transplanted from the side to the centre of the house about ten years later. The photograph of the tree in flower reproduced in fig. 7 was taken by Mr. Wallis in May this year, when it was a most striking object, about 30 feet high.

The first account of Davidia published in the *Gardeners' Chronicle* was by the late Dr. Masters, in April, 1903, p. 236, and there have been several notices of the tree, descriptive and otherwise, since. The tree in the Temperate House at Kew was raised from a cutting taken from the first tree raised in Europe, which flowered with Messrs. Vilmorin, Paris, in 1908, and a flowering shoot was illustrated in *Gard. Chron.*, June 2, 1906, fig. 158. Mr. E. H. Wilson sent seeds of Davidia to Messrs. James Veitch and Sons in 1899, from which a large number of plants was raised, and afterwards distributed.

As one would expect in a tree with a fairly wide distribution in the mountains of China, Davidia shows some variation, but not more than many other trees do. The leaves in some forms are green on both sides, in others they are glaucous beneath, and the degree of hairiness on the young shoots and leaves is also variable. At Kew four forms or varieties may be discerned. M. Dode has made three species, namely, D. involucrata, D. laeta, and D. Vilmoriniana. There does not, however, appear to be any good reason for this, and as Dr. Hemsley, who has paid particular attention to the genus, has stated that they can only be classed as varieties of one species, for practical purposes his view ought to prevail. *W. W.*

THE MARKET FRUIT GARDEN.

AFTER a dry May a dripping June would have been very welcome. Instead of this the month had less than the normal rainfall and more than normal sunshine. It is true that rain fell on eleven days in my garden as compared with seven in the corresponding month of last year, but the total fall was only .95 inch against 3.5 inches. The heaviest fall was .28 inch recorded for the 19th; and the rest of the showers were so light that the effect quickly disappeared under the influence of bright sunshine and drying winds. Thus, at the close of the month, fruit trees still looked as though thirsting for rain, if only to cleanse them of the mess left by the plague of caterpillars of the Winter Moth group. Most of these pests have now disappeared, being fully fed, but their place has been taken on Apple trees by aphides and the larvae of the Lackey Moth, the webs of the latter being unusually numerous. Still, the trees show some slight signs of recovery from the former attack, though they have made remarkably little

growth in what should be the season of most rapid development.

BLACK CURRANTS.

Alternating sunshine and showers hasten the ripening of such crops as are near maturity. Black Currants coloured very rapidly this season, and were ready to gather by June 24, a week earlier than last year. Marketing has been a simple business, if less interesting than usual. All had to go to licensed jam-makers or to salesmen who guaranteed to sell only to them, and the Government price, 60s. per cwt. on rail, was the figure for the whole crop, early or late. Thus there was nothing to be gained by trying different markets. Simplicity is, however, the only advantage of the system so far as the grower is concerned. The price, which works out at 12s. 10d. per half-sieve, with no deductions for railway carriage or salesman's commission, looks tempting enough. When, however, the very low yield and the consequently increased expense of gathering are taken into account, it becomes evident that the price does not err on the side of liberality. Last year the bushes between trees in a 6 acre plantation yielded 946 half-sieves and the average return was 17s. 4d., after deducting all marketing expenses except carriage. This year the same plantation gave only 145 half-sieves, or less than one-third the previous crop, whilst the cost of picking was but little more than again. Nor was last year's yield a good one, for the crop from the same bushes in 1916 was 729 half-sieves. A neighbouring grower has had one-third of his crop of last year, so that this may fairly be said to represent the average of the district. To enable the pickers to earn something more than the current high day wages it was necessary to offer 1s. 6d. per half-sieve, as gathering is a slow business when the berries hang thinly. This is the highest price we have ever paid for Black Currants, it being half as much again as was given last year, which was an advance on anything previously offered. In the circumstances it cannot be said that the Government price represents the true value of the crop. Of the prices that have so far been fixed, that for Black Currants is the only one that affords us. Growers of Strawberries, Gooseberries, and Raspberries have far more cause for complaint, particularly where choice dessert fruit is produced by specialised and expensive methods of cultivation.

AMERICAN BLIGHT.

In a season which seems to suit all insect pests it is not surprising to find woolly aphis or American blight, on the increase. Winter spraying with a caustic wash is said to hold it in check, but I have not found this to be the case. There seems to be no effective remedy beyond treatment by hand during the summer months. I have generally brushed methylated spirit into the affected patches; this specific runs well into the crevices and does its work without injury to the tree. Now that spirit is practically unobtainable it becomes necessary to find a substitute. Paraffin immediately removes the "wool," and appears to destroy the aphides, but it evidently does not kill all the insects, as the patches appear again after a few weeks. Moreover, strong paraffin is not a desirable dressing from the point of view of the tree's welfare. An undiluted soft soap and paraffin emulsion is now being tried, something of a soapy nature generally being considered best for the purpose.

This pest is evidently strongly resistant, and calls for something drastic in the way of a remedy. One would think that paring the patches in winter and dressing with Stockholm tar would prove effective, but in many cases I have found the pests flourishing under the tar after it has dried, apparently appreciating the waterproof covering. Any correspondent who can recommend a really effective cure for woolly aphis would confer a boon on growers. I have heard of a painter's blow lamp being employed with good results.

PROSPECTS FOR PLUMS.

The next crop to send to market will be Plums. These have now got safely past the stoning stage, and there has been very little dropping. Czar and Monarch were badly attacked by brown rot, as shown by the brown and dried leaves and spurs. These have been removed as far as possible, much improving the appearance of the trees, and, it is hoped, saving the fruit from contagion. The Food Production Department recently asked for an estimate of the crop on a percentage basis doubtless as an aid to the fixing of prices. A full crop, 100 per cent., is considered to be four half-sieves to a tree. Thus a

FIG. 5.—FRUITS OF DAVIDIA INVOLUCRATA.

(See p. 12.)

25 per cent. yield is one half-sieve, and so on. Estimating by this method is not difficult, and would make for uniformity if adopted generally. Judged by this system, Rivers' Early Prolific comes out best in my orchards, with a 50 per cent. crop. Czar and Monarch are put at 25 per cent. and Victoria at 10. Pond's Seedling carries so little fruit as to make estimation impossible, whilst trees of President, Black Diamond, and Belle de Louvain are carrying no crops. So far no prices have been fixed for Plums, but there is little doubt that they will be announced before long, and it is anticipated that they will be high. *Market Grower.*

PROSPECTS OF THE VEGETABLE CROPS.

WE have now reached the middle of the season in what is probably the most important year of vegetable cultivation this country has ever known, and at this stage it may be useful, as well as interesting, to take stock of the condition of the crops and consider the results likely to be attained. My remarks apply chiefly to vegetables grown on heavy land; it may be expected that those cultivating lighter ground will have scarcely such favourable results. Amongst the many thousands who have attempted the cultivation of food crops for the first time, few have failed for lack of energy and enthusiasm, but the season has been a very trying one, for in addition to a prolonged drought following a period of cold north and north-east winds, pests and diseases have multiplied at an unusual rate and greatly taxed the efforts of growers in keeping their plants healthy and steadily progressive.

Still, on the whole, the results far exceed expectations, and the large majority of crops are quite as good, or even better than could be expected, especially on land newly broken up.

Many of our early crops of vegetables were brought forward under glass and the seedlings planted out later, a system which I find a great advance on sowing in the open. Many Peas and Beans were grown in deep boxes raised under glass and grown on in the open, a plan which I have recommended and adopted for some years past. These crops proved to be much earlier and heavier than those from plants sown direct in the open. Portable frames are amongst the most valuable and profitable means of producing early vegetables on mild hot beds of leaves, and have been used at Aldenham for this purpose for many years. Such vegetables as early Asparagus, Globe Beet, Turnips, Carrots, Cauliflowers, and Vegetable Marrows may be grown with the greatest ease and in the highest stage of perfection by means of these frames. Standard sized frames and lights should always be used.

With regard to the oft-debated question of manures I still pin my faith to well-decayed farmyard manure as being the best material for a good feeding basis for the majority of crops, and, secondly, to burned garden refuse. A grower cannot do better than utilise these valuable sources of plant food. Soot is one of the most useful fertilisers, not only for its stimulating action upon growing crops, but also for the way in which it acts as a deterrent to many insect pests, though I am afraid that even now there are large numbers of growers who fail to realise its great value. Of the use of lime little need be said, for most cultivators know its value as a soil sweetener and its destructive powers to pests and diseases.

Two or three fertilisers are worthy of mention for the beneficial work they accomplish during the free-growing period of crops, and they are especially valuable for leafy crops. Nitrate of soda and sulphate of ammonia are both quick-acting artificials, whilst for root crops the slower acting phosphatic manures play a similarly important part. The phosphates may be divided into two groups, (1) basic slag, which for heavy soil proves most useful; (2) superphosphate, which is best for light soils.

These artificials should be applied at intervals of about three weeks during the season of active growth, and I would suggest the application of 1½ oz. of sulphate of ammonia per square rod for leaf crops, and 2 ozs. of sulphate of potash for root crops per square rod.

My own observations are as follows:—

POTATOS. Notwithstanding the continued drought, Potatos in this locality are looking remarkably well; the very early varieties are lifting splendidly, and should rain come quickly and in a reasonable quantity the later plantings should produce heavy yields. One cannot urge too strongly the importance of planting either

Scotch or Irish "seed" tubers in England, for, even when once grown in the south, the difference is most marked; in almost every case I have carefully made the comparison. The value of sprouting the sets before planting cannot be too greatly emphasised.

ONIONS.—Probably the crop next in importance to the Potato is the Onion, and Onions should be far more largely cultivated than at present, as they are very profitable to cultivate, being always in great demand. This crop is disappointing in some districts, owing more especially to the unfavourable weather, but it is not generally unsatisfactory, and I know of large areas in which the plants have done remarkably well. Wireworms, leather-jackets, and the Onion fly have been very prevalent this season and caused a considerable amount of damage.

PARSNIPS.—Though Parsnip seed germinated somewhat badly the crop looks very promising, and should provide much valuable food for the coming winter.

CARROTS.—These, in many places, are not nearly so promising as last year, but with us they have never looked better.

BEET.—Like Parsnip seed, that of Beet germinated very irregularly, and in many cases the seedlings were badly attacked by the Turnip flea, the first time I remember any serious damage being done to this crop by the pest; in spite of all this the crops should be satisfactory.

SHALLOTS generally are particularly good, and the bulbs will make a fine substitute for Onions where the latter are a failure.

CELERY.—Young Celery plants in this locality have suffered badly from the Celery fly, the foliage being much disfigured, and this has caused a lot of labour in destroying the pest and removing badly affected leaves. Celeriac has suffered in the same way, but there is yet plenty of time for these valuable vegetables to produce splendid results.

PEAS.—These, with us, were never nearly so good as they are this year, though in some districts they are not so satisfactory. Practically the whole of our plants are grown in deep, well-prepared trenches, which is, in my opinion, the best method of cultivating Peas, whether early, mid-season, or late varieties.

BROAD BEANS are as good as Peas, and for the first time we have intercropped these with Runner Beans, which are promising also remarkably well. This method of intercropping is an interesting and profitable one.

CABBAGE.—Cabbages generally have been good, but I never remember prices for this vegetable ruling so high, in many cases for produce not of the best.

CAULIFLOWERS have been particularly scarce, and have realised very high prices. Autumn sown plants proved to be far and away better than those sown in early spring, producing finer heads, maturing earlier, and withstanding the cold, dry weather much better.

MUSHROOMS.—I have long been of the opinion that Mushrooms are a valuable food crop, and they should be grown wherever it is possible to procure horse-droppings for the making of the beds. All kinds of excuses are put forward for not growing this nutritious food, such as inexperience, and lack of facilities. Very little experience will teach anyone the direction in which success lies, and if no building is available, Mushrooms may be cultivated well in the open. The demand is nearly always larger than the supply, and good prices can always be relied on, and they are especially good at the present time. The old material from spent Mushroom beds forms one of the most valuable manures for general use in all branches of gardening.

VEGETABLE MARROWS.—By starting the plants early on mild hot beds in portable frames, Marrows are available from April until about the end of May, when the lights and frames may be removed; at that date the plants will be in full bearing when the majority of growers are just planting their specimens. These same plants will continue to bear profusely till the first frosts destroy them. This year we have grown Marrows more extensively this way, the results being highly satisfactory. All are urged by the Food Production Department to cultivate Marrows much more largely this season; many local food committees are recognising them as fruit for jam making, and the earlier Marrows intended for this purpose can be selected and ripened the better.

PUMPKINS are as valuable as Vegetable Marrows. When well grown and thoroughly ripened they constitute one of the best winter vegetables. The essentials to success are to grow them in a sunny situation, keep the roots well supplied with water, and elevate the fruits above the foliage to expose them as much as possible to the sunshine.

WINTER GREENS.—Unfortunately the seeds of many kinds of winter Brassicas germinated very badly in many cases, but let me urge the importance of filling every foot of vacant space with greens of some kind or another, choosing as far as possible those which are among the most hardy and prolific.

VARIETIES.—It is remarkable how varieties differ in their action according to the locality in which they are grown; a certain sort may do excellently in one place, and may prove unsatisfactory in another. The surest guide to the grower on this question is for him to observe what sort does well in his own district. *E. Beckett.*

GARDEN VARIETIES OF STREPTOCARPUS.

IT is questionable if any class of decorative plants, except Perpetual Carnations, has made so much progress within the past 30 years as the garden varieties of Streptocarpus. Some members of the genus had long before that time been introduced into this country, but they were rarely met with outside botanic gardens. The oldest of all is Streptocarpus Rexii, which was introduced in 1824. The foundation of the present day race was the red-flowered S. Dunnii, discovered in the Transvaal in 1884, and first flowered at Kew in 1886. Mr. Watson at once took advantage of this distinct species, and by crossing it with S. Rexii a very pretty hybrid, to which the name of kewensis was given, was obtained. Crossed with S. parviflorus, the result was S. Watsonii. Both these hybrids attracted a good deal of attention, and they were given First-class Certificates by the Royal Horticultural Society in 1887. A commencement having been made the improvement of these Streptocarpi was taken in hand by other raisers, the result being the production of the present-day race, which is in every way desirable. There is a wide range in colour from the purest white, through different shades of pink and carmine, to deep red or crimson, while in many the blue, violet and purple shades are very pleasing. The plants are also exceedingly floriferous. Besides the species above named, it is quite possible that other more newly introduced kinds have been employed by the hybridist.

After the certificates awarded to the Kew-raised forms, several Awards of Merit were given by the R.H.S. to the different strains of hybrids from other raisers. Messrs. J. Veitch and Sons were among the first to take these in hand; indeed, their strain was in 1891 given a similar honour to those varieties from Kew.

These Streptocarpi may be readily raised from seed, which, if sown early in the year and given much the same treatment as Gloxinias, will produce plants that will flower in the course of the summer. Unlike Gloxinias, they do not form tubers, therefore they should during the winter be given water enough to keep the soil slightly moist, but not saturated. *W. T.*

The Week's Work.

THE KITCHEN GARDEN.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

MUSHROOMS.—Plenty of Mushrooms should now be forthcoming from ridge-shaped beds in the open or beds in cool sheds. Make preparations for supplies from the end of September onwards. The manure for the beds should be collected and prepared during the present month, as the early beds should be spawned by the middle of August. The earliest beds may be made in a cool, sheltered shed if the Mushroom house is not considered large enough. It is not advisable to utilise the houses much before November, when beds are spawned then and early in December.

GENERAL REMARKS.—In times of drought a few moisture-loving vegetables may suffer, but the beneficial effect of the extra warmth imparted to the soil is observable for the rest of the season. When the soil is dry and hard, weeds are easily kept in check, slugs are comparatively harmless, and winter vegetables form sturdy, hardy growth. The old fashioned plan of puddling the roots of Brassicas prior to planting should always be practised in hot, dry weather. All that is necessary is to mix some soot with clayey soil and water and thoroughly coat the roots with the stiff puddle thus formed. If Broccoli plants remain crowded in the seed-beds for a few weeks only they will form long stems; therefore the sooner they are set in their final quarters the better. Savoys should be grown in quantity in both large and small gardens, and ground that is cleared of Potatos will be suitable for them. Kales should be finally planted about 2 feet apart each way, or the rows may be 2 feet 6 inches apart. Keep all growing crops liberally supplied with water so far as labour permits, and give the plants an occasional watering with liquid manure. The thinning of such crops as Onions and Carrots should be done finally, in order that after this date they may receive as little disturbance as possible. A good watering should always be given the rows before doing this work, followed by subsequent waterings as often as the soil is found approaching dryness. Early Potatos are developing rapidly, especially on sandy soils. Heavy rains will have disastrous effects on these advanced crops unless precautionary measures are taken, as many of the tubers will start into fresh growth. When supertuberation takes place much of the crop is spoiled, and this should be prevented by lifting the tubers early. Many crops are infested with grubs and insects. Frequently dusting the damp foliage with soot will have a deterrent effect, and is the safest and best remedy. A sharp watch should be kept for the Celery leaf miner from day to day, and all infested leaves must be picked off and burnt.

FRUITS UNDER GLASS.

By W. J. GUISE, Gardener to Mrs DEMPSTER, Keele Hall, Newcastle, Staffordshire.

YOUNG POT VINES.—No useful purpose is served by retaining pot Vines when their fruit has been removed, as the house they have occupied can be utilised for ripening young pot Vines for next year's forcing. In the meantime the house should be thoroughly cleansed with warm, soapy water, and the bed put in order. There should be no difficulty in removing these Vines to a suitable house where they will receive the maximum amount of light and air, providing they have not been allowed to root through into the plunging material. It is not advisable to plunge the pots; indeed, it is a better plan to raise them a little above the bed, so that sunshine and air may reach the whole length of the canes, and, maybe, to a lesser extent, the roots. When growth is complete allow a free circulation of air, and on no account permit any lack of moisture. Syringe the Vines daily until the foliage changes colour. The laterals may be cut back if the main leaves are healthy, but not if they are damaged or destroyed.

FIGS.—Established Fig trees in borders which have been kept dry while ripening their first crop are liable to attacks of red spider. Now that the fruits have been gathered the syringe should be brought into use again. Thoroughly water the roots, and should the second crop be a heavy one, afford frequent applications of liquid manure. A top dressing of decayed manure will conserve the moisture, but it should only be applied when the borders are full of roots and the trees carrying heavy crops. Syringe the trees vigorously twice daily and keep the atmosphere moist by frequently sprinkling the paths and borders. Ample ventilation must be afforded early in the forenoon, but the house should be closed early in the evening. At no stage of growth should the atmosphere be cold and damp. Keep the shoots trained regularly to prevent overcrowding, and expose all parts of the trees to sunlight and air. Thin the fruits where necessary, preferably in various stages of development, otherwise there may be a glut of ripe fruit instead of a succession.

MELONS.—If the leaves on the plants from which the fruits are now being gathered are clean and healthy, such plants need not be discarded, because, with liberal treatment, they will produce an excellent second crop of fruits. Shorten back the growths and give the bed a liberal watering of diluted liquid manure. Syringe the plants lightly once or twice daily, according to the state of the weather, for, although Melons revel in moisture, syringing may be carried to excess. I prefer to obtain the necessary atmospheric moisture chiefly by syringing the paths, walls, and bare spaces frequently during bright weather. No time should be lost in setting out plants in narrow, shallow beds, or in pots, for autumn fruiting, as it is not an easy matter to obtain highly flavoured Melons from plants set out after this date, except in very favoured districts and favourable seasons.

THE HARDY FRUIT GARDEN.

By JAS. HUDSON, Head Gardener at Gunnersbury House, Acton, W.

AUTUMN-FRUITING RASPBERRIES.—The comparatively dwarf variety Belle de Fontenay is developing flower trusses. From now onwards the weaker shoots should be thinned out, but not of the latest kinds, such as the Hailsham berry and November Abundance, for a little longer. I do not care to cut away any shoots that show for fruiting, for by grading these a better succession may be maintained. Keep the ground well hoed and watered if there is need of moisture, but the application of mulches is hardly necessary. These Raspberries need not be netted until early in September. Defer the staking and tying of the plants for a few weeks longer; I prefer to do this work early in August and put the nets on afterwards.

FRUITS FOR PRESERVING.—It is better to pick fruit for preserving when it is slightly under-ripe rather than over-ripe; very ripe Strawberries would be too soft for the purpose, and dead ripe fruit of any kind does not keep well when preserved, even when slightly more sugar is used. The flavour, too, will be better for being slightly tart. Fortunately most soft fruits are plentiful in gardens this season. Our Black Currant bushes never carried such heavy crops, notwithstanding they have the big bud pest; the fruits have all been gathered in these gardens. Other Currants, too, are clean and the bunches good; these fruits will soon be fit for use; in fact, we shall follow on with them at once. Our earliest Raspberries were picked on the 3rd inst., and the first big picking will be made and the fruits used for bottling before these lines are in print; the second picking will be used with the Currants. Of Strawberries, Keen's Seedling has again been our mainstay for preserving. The fruits require a lesser quantity of sugar than more acid varieties. Other berries, such as the Loganberry, the Phenomenal berry, and its near counterpart, the Newberry, are useful for dessert purposes, especially for breakfast. The Lowberry is distinct, with lustrous black fruits; this, too, is a very serviceable fruit for sending to table. The Kentish Cherry is with us carrying a good crop, but these fruits require to be gathered soon as birds are fond of them.

PUMPKINS FOR PRESERVING.—In view of the scarcity of late stone fruits we have grown Pumpkins of the giant type for the making of preserve. The plants are doing well, and several fruits are already set; with attention to watering there should be a good crop at the end of the preserving season. Pumpkins for jam making should be well matured. Even if not used for preserving Pumpkins and Gourds keep for a long time, and may be used instead of Apples where these are scarce. I do not intend to crop my Pumpkin plants heavily; I shall be satisfied with one good fruit on each. I give preference to Pumpkins over Vegetable Marrows, as the jam from the latter is not so good from the point of colour, although possibly firmer when made of well matured fruits.

PLANTS UNDER GLASS.

By E. HARRISS, Gardener to Lady WANTAGE, Lockinge Park, Berkshire.

ROSES IN POTS.—Climbing Roses growing in pots have passed out of flower, and attention must be paid to next year's flowering growths. Plants which show signs of exhaustion should be cut back hard to encourage new shoots to develop from their bases. Those which are growing satisfactorily should be relieved of all the old flowering wood in order that the young growths may have plenty of room to develop. Carefully examine the stakes of each plant, and replace old ones with new where this is necessary. The plants should be plunged in a bed of ashes in a sheltered position out-of-doors until they are required for forcing. Syringe them vigorously in the evening; should aphis attack the young growths use an insecticide. Water the roots with stimulants on two or three occasions weekly.

SOUVENIR DE LA MALMAISON CARNATIONS.—These Carnations must almost be classed as perpetuals, and preparations for layering shoots should be made at once to obtain strong plants before the winter. Prepare a fine compost consisting of loam, leaf-mould, and sand. Place on the border a shallow frame in which to layer the plants. The fresh soil should be at hand and used around the plants as they are layered. The oldest plants should be used for layering, reserving the best of the one-year-old specimens for potting into larger receptacles. These plants will produce the main supply of flowers next season. When layering is finished for the day the plants should be thoroughly soaked with water, and the lights placed on the frames. Shade them from bright sunshine, and keep the frames fairly close until the plants are rooted. They should then be gradually accustomed to cooler conditions. Pot on one-year-old plants as soon as possible, using 8-inch or 9-inch pots. A suitable compost is formed of rich, fibrous loam, manure from a spent Mushroom bed, wood ash, crushed bones, and coarse sand, in suitable proportions. Pot moderately firmly, and place the plants in a cool house. Keep them shaded for a few hours during the hottest part of the day till they have recovered from the disturbance of repotting, and water the roots with extra care.

ASPARAGUS SPRENGERI.—This exotic Asparagus is another useful plant for furnishing foliage for all kinds of decorative work. It may be grown as advised for Smilax, or in pots and baskets. It makes a handsome plant grown in hanging baskets for the conservatory or greenhouse. When well established it is scarcely possible to give the roots too much water during the summer.

THE ORCHID HOUSES.

By J. COLLIER, Gardener to Sir JEREMIAH COLMAN, Bart., Gatton Park, Reigate.

ONCIDIUM.—Many of the cool-growing Oncidiums, such as O. concolor, O. crispum, O. Marshallianum, and others, after a short period of rest, will begin to push forth new growth, and about this time will probably be fit for repotting. The majority of these species produce their flowers in pendulous racemes and are best grown in shallow pans and suspended from the roof-rafters in the warmest part of the cool division. A suitable rooting medium consists of equal proportions of chopped Osmunda- or A 1 fibre and half-decayed Oak-leaves. These plants resent having a large amount of compost about their roots, therefore moderate sized pans should be used, with a good supply of drainage material. Oncidium tigrinum grows best if afforded much the same treatment as for Odontoglossum crispum, and any repotting of this species should be done when the new shoots are about 2 inches long. Frequent root disturbance is not desirable. Water should be afforded with moderation; while the plants are at rest, only sufficient moisture need be given to keep the pseudo-bulbs plump. Oncidiums of the warmer-growing section, including O. Lanceanum, O. luridum, and O. carthagenense may also be afforded fresh rooting material as they reach the desired condition. A light position in the warmest house is most suitable to their requirements. When in active growth the plants should be given liberal supplies of water at the roots, and sprayed freely on bright days, but during the resting season water should be applied very sparingly, as the fleshy leaves are capable of withstanding a reasonable amount of drought without injury. When an excess of moisture is applied the leaves become spotted and rot off.

EPIDENDRUM.—Many Epidendrums have little garden value, but certain species are well worthy of cultivation. The winter-flowering E. vitellinum majus is one of the most useful and decorative, as it produces bright scarlet flowers during the winter. It succeeds best in the cool house, and should be repotted or top-dressed when new growth commences. Place the plants in shallow pans provided with ample drainage, and suspend them from the roof-rafters, or place them on the stage in a light position. Afford water sparingly during the early stages of growth, but when root-action is vigorous give liberal supplies of moisture until the pseudo-bulbs have matured. During the resting season afford only sufficient water to keep the growth firm.

THE FLOWER GARDEN.

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

IRISES.—Some years ago I gathered most of the summer-flowering Irises into a long border, where they have become close enough to form a mass of vegetation. The display of flowers this year has been a revelation of the great beauty of all kinds. Even those that could only be described as nondescripts are beautiful in large groups.

ROSA.—The early-flowering Rosa alpina will soon be displaying its brilliantly coloured elongated hips; it is an object of interest at all times, being distinct in foliage and wood. The plants are at their best when allowed space to develop into large bushes, which established specimens do by means of suckers. The form we grow is pyrenaica. Another shrubbery Rose of much effect at the present time is Rosa rubrifolia. When well established this species may be pruned hard at short yearly intervals, when strong shoots furnished with fine decorative foliage will develop.

GILIA CORONOFOLIA.—It is important to make an early sowing of this brilliantly coloured species. The seeds remain in the soil for a long time before they germinate, and the growth of the plants in their early stages is also very slow, so that strong flowering plants for another year can only be had by sowing now. They do best grown on in pots, shifting them as required; the final pots need not be larger than 5 inches diameter. It is essential to keep them growing slowly, just like Humeas, and, like Humeas, they are apt to die unless very carefully managed. The last named plant should also be sown about this time.

CLEMATIS MONTANA.—This beautiful early flowering species will now, or soon, need attention in pruning and thinning the shoots that have flowered. Both the type and the rose-coloured variety are perhaps seen at their best when trained to hang over and below balconies. The variety has been very fine here trailing over large stones on a rockery, the shoots being kept in position by placing small stones on them, the stones being hidden by the foliage of the plants.

EDITORIAL NOTICE.

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

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

Special Notice to Correspondents.—*The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.*

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

Letters for Publication, *as well as specimens of plants for naming, should be addressed to the* **EDITORS, 41, Wellington Street Covent Garden, London.** *Communications should be* WRITTEN ON ONE SIDE ONLY OF THE PAPER, *sent as early in the week as possible, and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.*

APPOINTMENTS FOR THE ENSUING WEEK.

TUESDAY, JULY 16—
Roy. Hort. Soc. Comm. meet, and National Carnation and Picotee Soc. combined show, at the Drill Hall, Buckingham Gate, Westminster.

THURSDAY, JULY 18—
Croydon Hort. Soc. Vegetable Ex. in Park Hill Recreation Ground, Croydon.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 65.7

ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, *Thursday*, July 11, 10 a.m. Bar. 29.9, temp. 59.5°. Weather—Raining

The R.H.S. Scientific Committee.

The Scientific Committee of the Royal Horticultural Society is just fifty years old. It was originally called together to "promote and encourage the application of physiology and botany to purposes of practical culture" (we quote from a circular letter sent out in March, 1868), "and to originate experiments which may assist in the elucidation of horticultural subjects." Of the original members of the Committee only one remains, Mr. J. G. Baker, F.R.S.; all the rest have passed away. It included men foremost in their own spheres—De la Rue, F. A. Abel, J. H. Gilbert, A. Voelcker, Chas. Darwin, Herbert Spencer, Sir Joseph Hooker, George Bentham, Robert Fortune, Frederick Welwitsch, Robert Hogg, Maxwell T. Masters, Wilson Saunders, and G. F. Wilson, the maker of Wisley. The President of the Society, the Duke of Buccleuch, was first chairman; the Rev. Myles Berkeley, one of the most eminent students of plant diseases, the first secretary. The first meeting was held on April 20, 1868, when the secretary outlined a policy which has been in the main the policy which has actuated the Committee ever since. He foresaw the need for the Society undertaking its own experiments and the establishment of an experiment station for horticulture, but warned the Committee that that was not possible then. Questions of morphology as well as physiology, of nomenclature, information of general horticultural or more purely botanical interest, botanical geography were all deemed proper subjects for the consideration of the Scientific Committee, and the reading of papers and the holding of conferences upon various plants of horticultural interest were all contemplated.

Almost immediately after its establishment experiments upon certain plant diseases were set afoot, and the attacks of insect pests frequently formed the subject of comment.

Allowing for change of outlook and advance in knowledge, the policy and the method outlined at the first meeting have remained almost the same ever since. Men eminent for their knowledge have constantly allowed their names to be added to the Committee as time has passed, and others have dropped out, and the proceedings of the Committee form a series of records which no one conducting any inquiry into the science of horticulture can afford to neglect. Like all other bodies, the Committee has had its ups and downs, but even in its least active times the attendance records show how men like the late Dr. Masters, the late Sir Joseph Hooker, and the Rev. Geo. Henslow kept the meetings going and carried out the functions for which the Committee was constituted.

It is within the recollection of many of its present members how, about twenty years ago, the Committee was largely increased and entered upon a renewed period of activity, and many of its present members, under the active chairmanship of the late Dr. Masters, took part in assisting its progress.

Another name long and actively connected with the Committee also calls for mention—that of the Rev. Prof. Henslow, who was secretary for some twenty-five years.

The efforts of the Committee have done not a little towards stimulating interest in the cultivation of plants for their own sake, and in bringing about some sort of uniformity of method in plant naming, while never from its inauguration, and its early efforts in support of Hooker's administration of Kew, when Kew appeared likely to be alienated from its purpose, did the Committee cease to bear in mind, and when opportunity offered to urge, the establishment of a station for scientific investigation under the Society's ægis. This was accomplished in 1907, when the funds of the Society warranted the step, which, not for lack of will on the part of the Council, had been only looked forward to for forty years. The present Committee is an exceptionally strong one, and includes not only a large number of scientists interested in the particular problems of the garden, but representatives of trade firms and many prominent gardeners, both amateur and professional. The chairman, Sir W. Thiselton-Dyer, is an old and valued member, and the list of vice-chairmen includes the names of Sir Daniel Morris, Lieut.-Col. Sir David Prain, and Mr. E. A. Bowles. In recent years Mr. Bowles has more often presided at the meetings, and both his services and those of the hon. secretary, Mr. F. J. Chittenden, have been invaluable to the Committee.

The Drought.

Gardeners everywhere, but particularly those who cultivate light soils and who are unable to obtain adequate supplies of manure, have experienced a difficult time, and it will require all their ingenuity to secure anything like reasonable returns from many of their crops. The long spell of drought which now appears to be breaking up has discovered the lack of resource in light and incompletely manured soils, and nothing is more striking at the present time than the state of garden crops in such soils in comparison with that of those in similar but well-manured soils. In the one case the crops are "doing nothing"—they remain quiescent, and are unable to make growth in the absence of moisture. Where, however, a moderate dressing of manure was put under the site of the crop, the drought so far has had but little effect, and some of the finest Peas which we have ever seen are growing and flourishing under these latter conditions. For our part, we are convinced that where—as is only too frequently the case nowadays—supplies of manure are deficient, it pays far better to spread the manure more densely beneath the site of each crop than to distribute it uniformly over the ground and then to dig it in.

Experience with these poor, light soils shows also that watering is of but doubtful value—in some cases, of course, it must be done, as, for example, with Tomatos, but constant working of the soil pays far better in the long run. In no direction has the drought done more serious harm than in that of the soft fruit crops. The promise was bad, but the performance of these crops is worse even than the promise. This is particularly noticeable in the case of the Raspberry, which, like the Red Currant, bade fair to produce a good crop. Nevertheless, in the continued absence of rain, the berries failed to swell; such as ripen are of poor size, and will give the pickers in commercial plantations very tedious work. It is therefore but just that the Ministry of Food, on the recommendation of the Board of Agriculture, should have increased the price from £37 to £44 per ton. The need for jam is so great that everyone who has fruits to spare should endeavour to supply his surplus to the Controlled Jam firms, on whom the responsibility rests for providing jam for the Navy and Army. The names of these firms may be obtained on application to the Ministry of Food, or to the Food Production Department. It is the more urgent that this course should be adopted on patriotic grounds, because of the dearth of Plums—which fruit is in normal years the main supplier of the jam pot.

Those who have fruit which they are prepared to dispose of in this way should communicate with the latter of the Departments named above, if they require assistance in disposing of their surplus. The dearth of cultivated fruit makes it imperative that the systematic collection of wild fruit, such as Blackberries, should be undertaken. Arrangements for this col-

lection are, we understand, now being made, and gardeners should be able to lend valuable assistance to the County organisations undertaking the work of collection, and in particular their knowledge of packing and despatching to market should be specially valuable. If sufficient wild fruit is to be obtained to make up for the lack of cultivated fruit, the help of everyone in country districts, and that of many from urban districts, will be required, for the quantity of Blackberries which should be gathered may be estimated at many thousands of tons. Fortunately, there is a brave showing of blossom, and with the welcome rain of the past few days there should be an abundance of ripe fruits.

WALKER PRIZE AWARDED TO PROF. J. LOEB.—The Walker Grand Prize, given every five years for scientific investigation or discovery in natural history first made known in the United States, has been awarded by the Boston Society of Natural History this year to Prof. JACQUES LOEB, of the Rockefeller Institute, as a recognition of his works, covering a wide range of inquiry into the basic concepts of natural history. The prize is a thousand-dollar Liberty Bond.

HARVESTING THE FLAX CROP.—Three thousand women and girls have been sent to Somerset and Northants during the past week to pull flax for the Government. They have been recruited and despatched by the Women's National Land Service Corps.

NATIONAL DIPLOMA IN HORTICULTURE.—The results of the 1918 Examinations for the National Diploma in Horticulture, held at the Royal Horticultural Society's Gardens, Wisley, in June, are as follows:—Section I. General Horticulture.—JOHNS, W. H., 2, Bean Street, Waterford; KING, Miss G. D., Groton Rectory, Ellsworth; RAMSBOTTOM, J. K., 61, Emmedale Road, Richmond, Surrey; JOSHUA, Miss I. H., 7, Waterloo Place, Kew Green, Surrey. Section VIII. Horticultural Teaching.—JOHNS, W. H., 2, Bean Street, Waterford. The following candidates satisfied the examiners' requirement in the Preliminary Examination:—JONES, Miss D. R., The Bungalow, Battle Abbey Lane, Heath, Southampton; SMALLBONE, Miss E. L., Homerton College, Cambridge; HAKE, Miss L. W., 43, Gillingham Street, Eccleston Square, London; BENNER, J., 8, Waterloo Place, Kew Green. These candidates are accordingly eligible to take the Final Examination in 1919 if they have then spent six years in regular garden work, or as soon thereafter as they can satisfy this requirement.

ACCIDENT TO CAPT. A. W. HILL. We regret to learn that Capt. ARTHUR W. HILL, Assistant Director, Royal Gardens, Kew, met with an accident about ten days ago. He was thrown from his horse, in Richmond, and remained unconscious for several hours. We are, however, very glad to be able to state that the consequences of the accident have not been so severe as was anticipated at first, and his many friends will be pleased to know that Capt. HILL is able to attend to his business again, though still suffering from shock.

AMERICAN FLORISTS' CARE OF WOUNDED SOLDIERS.—Thirty-eight thousand florists in the United States have pledged themselves to keep the base hospitals supplied with fresh flowers.

TRAFALGAR SQUARE FLOWER FAIR.—Lord BERESFORD has sent a letter to the Council of the Royal Horticultural Society thanking the Society for the support given in connection with the Flower Fair held recently at Trafalgar Square. He also asks that an appreciation of the services rendered by them be tendered to Mr. BISSET and Mr. JORDAN, two of the Society's employees, who had entire charge of the enclosure containing the nurserymen's exhibits and put up all the staging. Lord BERESFORD states that 43,000 people paid for admission to the fair, and despite unfavourable weather, the sum of nearly £9,000 was received on behalf of the British Ambulance Service with the French troops.

SUMMER PRUNING OF FRUIT TREES.—In the case of standard fruit trees in orchards, summer pruning is not necessary, nor would it be practicable; but for bush, pyramid, and other trained trees grown in the garden under certain limitations of space, summer pruning is essential for the maintenance of fruitfulness and the production of heavy crops. Stated briefly, summer pruning consists in shortening the current year's growths so that the natural forces thus checked may be diverted to the production of fruit buds. The removal of growth and leaves allows more light and air to enter the tree to mature or "ripen" the wood and buds. The condition of the trees, the time of year, the weather, and the locality, must all be taken into account in determining the extent of the summer pruning necessary. Young trees carrying poor crops usually make free growth, and in such cases it would be unwise to shorten such free growth by two-thirds, as this would only cause other shoots to develop, and the end in view would be defeated. In such cases a moderate reduction of growth would suffice, thus allowing the upper buds to act as safety valves, and permitting the development of fruit-buds at the base. This season the prospect of secondary growth is unusually great if a period of wet weather follows the long-continued drought, therefore growths should not be shortened so severely as usual, and the pruning period should be extended over a fortnight or three weeks. The middle to the end of July is generally the

[Photograph by E. J. Wallis.

FIG. 7.—DAVIDIA INVOLUCRATA FLOWERING IN THE TEMPERATE HOUSE, K.W.

(See p. 12.)

best period for the summer pruning of Apples, Pears, and Plums, shortening the shoots to five or six leaves.

PRIVATE GARDENERS AND WAR SERVICE.—A copy of the following memoranda, issued by the Controller of Horticulture to Agricultural Executive Committees, has been received by the Royal Horticultural Society: "The question as to the position of private gardeners who are engaged on work of food production which may reasonably be considered to be of national importance has been under consideration. In dealing with such cases the following points should be considered by Agricultural Executive Committees. It is of no importance whether a man was registered under the Registration Acts of 1917 and 1918 as a gardener or otherwise who was not at the time of registration occupied in food production. The occupation on May 28, 1918, is the ruling fact. The essential point to be considered is not the acreage under cultivation, but the man's occupation, the value of that occupation to food production, and the volume of produce depending on the exercise of the occupation. If the Committee is satisfied that a man is wholly or mainly engaged in the production of food of a kind and quantity to constitute national importance, they may issue a voucher under the Agricultural Exemptions Order, 1918, protecting him from military service. It is also to be clearly understood that if a man has already been called up the calling up notice will not operate and should be cancelled if an Agricultural Executive Committee decides that he is eligible for a voucher under the Order."

BOOKS AND THE LUXURY TAX.—The Council of the Royal Horticultural Society has addressed the following Memorandum to the Committee set up by the Government to prepare a scheme for the taxation of luxuries: "The President and Council of the Royal Horticultural Society, representing upwards of 13,000 persons in this country, many of them deeply interested in scientific and research work, beg to submit the following Memorandum on the alleged inclusion of books among luxuries: (1) To encourage education and tax books appears to us to be giving with one hand and taking away what is given with the other; (2) scientific and research work are largely dependent on the study of books and printed literature, and if we are, after the war, to be in a condition to rival German scientific work it can only be done by the diligent study (amongst other things) of books; (3) the improvement and extension of practical gardening, which must to such a great extent be relied on for securing larger food crops, depend on a free circulation of books devoted to the subject, and it is only by such books that the results of scientific research are made available to the manual worker. We therefore hope that the report of the inclusion of books within the operation of the Luxury Tax may be reconsidered."

HOME CORRESPONDENCE.

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

HARDENING TENDER PLANTS.—The editorial article on page 6 is well worthy of careful perusal by those who have plant houses under their charge. The reduction of fuel will very likely cause many tender plants that have been generally grown to almost if not quite disappear from gardens. Exotics may retain their health in a lower temperature than that in which they have hitherto been grown, and it is quite possible that some interesting features may be recorded. I have been told of a Stephanotis which was annually wintered in a greenhouse from which frost was just excluded, and the plant was said to flower freely each year. A very important portion of the article in question is where attention is called to the fact that even tender plants will submit to relatively low temperatures, provided they are grown as hardy as possible in summer and autumn. The hardening off of tender plants before they are turned out-of-doors or removed to cooler houses is very general in the spring, especially in the case of bedding plants. This same practice may well be followed as you advise during summer and autumn in order to prepare the plants for a lower temperature in winter. A free circulation of air, and the reduction of atmospheric moisture will tend to ripen the wood, so that the plants will be less affected by cold than would be the case if the growths were in a soft, unripened condition. Another point to bear in mind when plants are subjected to an unduly low temperature is to keep the soil as dry as it reasonably can be without unduly distressing the roots. Any watering that is absolutely necessary should be done in the morning of fine days, so that plenty of time is allowed for the superabundant moisture to dry up before evening. Should frost enter the house the roof should, if possible, be covered up, so that the plants are in darkness till they are thawed gradually. *W. T.*

THE PRICES OF VEGETABLES.—It may interest *W. T.* and others of your readers to know that not all growers are "profiteering" in Lettuces. I sent to one of the London markets recently 51½ doz. Cos Lettuce and 13 doz. Cabbage Lettuce. The majority of the Cabbage Lettuce would weigh about ½ lb., and 4 to 5 doz. would fill an ordinary salesman's hamper (not flats), and 3 doz. Cos to each hamper, so they were not a small sample. My returns to hand gave me 10d. per dozen (gross). After deducting railway charges and salesman's commission, I had the munificent sum of about 5½d. per doz. This return, with the present price of labour and high cost of requisites, leaves but little for the grower. *Amateur Market Grower.*

SOCIETIES.

NATIONAL ROSE.

JULY 4.—In brilliant weather the National Rose Society celebrated Independence Day by holding a very successful exhibition at the Royal Botanic Gardens, Regent's Park. A schedule of forty-eight classes was provided, and the usual trophies and pieces of plate were offered for competition as in former years. The exhibition was in aid of the funds of the British Red Cross Society, and was under the special patronage of her Majesty Queen Alexandra, who visited the show and spent a long time inspecting the Roses. She was accompanied by Sir Dighton Probyn, the Hon. Charlotte Knollys, Hon. Violet Vivian, Miss Willmott, Messrs. E. J. Holland (president), Courtney Page (hon. sec.), and Chas. E. Shea.

The tents were crowded with members and visitors, including a large number of wounded soldiers.

NEW ROSES.

As in previous years, one tent was set aside for new Roses. The Committee made the following awards:—

GOLD MEDALS.

Golden Ophelia (H.T.).—A very beautiful Rose, of moderate size, shapely and bright. The colour is light golden, and is intensified in the buds. The stems are long and stout, dark hued, and furnished with very dark foliage. A lovely variety for garden and decorative purposes, and said to be suitable for growing in pots. Raised and shown by Messrs. B. D. CANT AND SONS.

Colonel Oswald Fitzgerald (H.T.).—A very handsome variety, of vigorous growth. The flowers are of good size and tea scented; the colour is brilliant crimson-scarlet of an exquisite and attractive shade. The stems are long, and the leaves dark hued. Said to be perpetual-flowering and suitable for all purposes. Raised and shown by Messrs. ALEX. DICKSON AND SONS.

Pax (H.M.).—This is a very free-flowering hybrid Musk variety, with dark stems and foliage; the semi-double flowers are about 4 inches across, cream-white, with a central group of golden stamens and anthers. It is described as good for garden, bedding, and massing, and flowers from May to October. As shown it was grown on the Dog Rose stock. The individual blooms have foot-stalks about 4 inches long, consequently the branching clusters are most effective and graceful. Raised and shown by Rev. J. H. PEMBERTON.

Lamia (H.T.).—Another addition to the orange-flushed Roses. The semi-double blooms are exquisitely elegant, and the buds long; the stems and foliage are very dark, and form a fine setting for the gorgeous blooms. The colour is orange over yellow, and the orange is very deep and rich on the backs of the outer petals. Lightly tea-scented, free-flowering, and good for garden decoration. Shown by Mr. WALTER EASLEA.

CERTIFICATES OF MERIT.

Mrs. C. V. Haworth (H.T.).—A glorious and gorgeous semi-double variety, eminently suitable for garden decoration and bedding. It is difficult to adequately describe the colouring of the broad petals, as deep gold shades from the centre to amber and pink, and the boss of golden stamens and anthers add to the fine effect. Foliage dark and glistening. This Rose attracted very much attention. Raised, and exhibited for the first time, by Messrs. ALEX. DICKSON AND SONS.

Chameleon (H.T.).—As a decorative Rose this variety is of great promise. The colour is light orange and deep pink, and these shades intermingle in a most subtle and attractive manner. Some expanded flowers develop more pink, others show more orange shading, but all are beautiful, and the effect is gorgeous. As a decorative variety it has a great future, but for bedding purposes it may not be such a success, as the older and rosy flowers, if numerous, would reduce the effect of the orange glow in younger blooms. Raised and shown by Messrs. ALEX. DICKSON AND SONS.

Mrs. H. D. Greene (H.T.).—A very free-flowering variety, fragrant and shapely. The colour is soft rose with flushing of orange fawn, but this brighter shade seems to disappear as the flowers grow older. The buds are charming; stems and foliage very dark. Shown by Mr. WALTER EASLEA.

Dr. Joseph Drew (H.T.).—A deliciously fragrant Rose, with broad-petalled and bright, pearl-pink blooms borne freely on stout stems furnished with dark foliage. Raised by Mr. COURTNEY PAGE, and shown by Mr. WALTER EASLEA.

Lady Beatty (H.T.).—A particularly vigorous variety, suitable alike for garden or exhibition purposes. The foliage is very handsome, deep green, and the large-petalled flowers are sweetly fragrant. The colour is pale pink, with rosy suffusion at the edges of the petals, and a soft yellow glow at the bases. The flowering stems are long and stout. Raised by Mr. W. R. CHAPLIN and shown by Messrs. CHAPLIN BROS.

Edith Cavell (H.T.).—A faintly fragrant bloom of large size, with broad petals and pointed buds. The variety was obtained by crossing Frau Karl Druschki with St. Helena. The cream-white blooms are borne on long, stout stems, and the foliage is large and deep green. Raised by Mr. W. R. CHAPLIN and shown by Messrs. CHAPLIN BROS.

Independence Day (H.T.).—A rather small but shapely and scented variety, of medium habit, and suitable for bedding and for decoration: an ideal buttonhole Rose. The colour is rich orange-tinted yellow with a rosy flush on the recurving margins of the petals. Raised and shown by Messrs. BEES, LTD.

Mrs. Walker (H.T.).—A vigorous Rose of deep and bright velvety-crimson colour, semi-double, handsome, and lightly scented. It has handsome green foliage, appears to be very free-flowering, and is said to be perpetual blooming. Raised and shown by Messrs. FRANK CANT AND CO.

The Premier.—A distinct variety, obtained by crossing Rosa lucens with (probably) Miss Alice Rothschild. R. lucens is said to be mildew-proof, and in this respect The Premier has, so far, the good quality of its parent species. The variety is strong in growth, a pillar Rose, with light green foliage and clusters of semi-double blush flowers, each bloom about 1½ inch across. Raised and shown by Messrs. PAUL AND SON.

OTHER NOVELTIES.

Molly Bligh, shown by Messrs. ALEX. DICKSON AND SONS, is a vigorous H.T. variety, of excel-

lent form and good size; the colour is deep rose-pink, with an orange glow at the base.

The single H.T. variety *Irish Afterglow*, shown by Messrs. ALEX. DICKSON AND SONS, is vigorous and free flowering, and should be suitable for bedding and very useful for home decoration.

Mr. ELISHA HICKS showed a beautifully fragrant H.T. variety named *Mrs. Elisha Hicks*. The flowers are large and shapely, almost white, but with a pale blush-pink suffusion.

Golden Gem, shown by Messrs. FRANK CANT AND CO., is a neat little Rose that has bright orange shading on the outer petals of its buds, but opens a bright, pink-flushed yellow colour.

Lilian Moore (H.T.).—A vigorous H.T. variety, of moderate size and excellent form, coloured deep rich cream, with a suggestion of pink. Shown by Messrs. HUGH DICKSON, LTD.

Remarks on the Nurserymen's and Amateurs' Classes will be published in the next issue.

SOUTHAMPTON ROYAL HORTICULTURAL.

JUNE 26.—This society was again favoured with fine weather for its Rose show, which was held on the 26th ult. in the beautiful grounds attached to South Stoneham House, the residence of Ellen Lady Swaythling. The attendance, over 10,000, was a record since the Westwood Park days, the gate money amounting to over £500.

The show was rather disappointing in the matter of entries, but what was lacking in quantity was made up in quality. Mr. ELISHA J. HICKS carried all before him winning the 1st prizes in the open classes, and securing for the second time the open Challenge Cup. He also won the Medal offered for the best bloom in that division with the variety Charles E. Shea. Messrs. D. PRIOR AND SON were placed 2nd in each case. The Cup open to amateurs was won by Dr. LAMPLOUGH, who showed 15 fine blooms; 2nd, Capt. KIRBY SCARD, whose exhibit gained only two points fewer. This latter gentleman won the Silver Medal offered for the best bloom in that division with a fine flower of Mildland Grant. Mr. E. M. BURNETT, Westwood Road, was the most successful exhibitor in the local classes; he won seven 1st prizes and two cups. Mrs. BURNETT was equally successful in the Ladies' Classes. Messrs. W. H. ROGERS AND SON, LTD., and B. LADHAMS, LTD., were both awarded Gold Medals, and Mr. E. WITTS a Silver Medal for non-competitive exhibits.

SCOTTISH HORTICULTURAL.

JULY 2.—The monthly meeting of this Association was held at 5, St. Andrew Square, Edinburgh, on this date, Mr. R. Fife, President, in the chair.

Mr. W. Cuthbertson gave an address on "Early Potatos," illustrated by specimens of Sharpe's Victor, May Queen, Midlothian Early, Epicure, America (a new variety), Eightyfold, Edzell Blue, and others grown in Yorkshire, Ayrshire, and Edinburgh. Mr. Cuthbertson stated that the earliest Potatos on the market came from the Canaries, followed by those from the Channel Islands. The earliest grown on the mainland were produced in the Penzance division of Cornwall, but the biggest early Potato area in Britain was in Ayrshire, where some 7,000 acres were grown for the early market, and are being marketed now. Mr. Cuthbertson gave an interesting account of the origin of many of the varieties. He referred to the need for new varieties of early Potatos resistant to wart disease. Varieties such as Edzell Blue, Resistant Snowdrop, America, and A1 were immune, but were not available in sufficient quantities required for seed purposes in the infected areas in England. He pointed out how important an industry to Scotland the growing of seed Potatos was, and suggested that it ought to be fostered more than it has been by such agencies as the Scottish Horticultural Association and the Scottish Board of Agriculture. He thought the time was ripe for the holding of a national Potato show in Edinburgh every year, with classes open to allotment holders, gardeners, seedsmen, and farmers.

TRADE NOTES.

"TESTING OF SEEDS ORDER, 1918."

THIS Order came into force on July 1, 1918, and supersedes the Order of 1917, which is now revoked. Consequently, the provision that particulars are not to be given unless demanded by a purchaser, and not even then in the case of small packets, is no longer in force. The new Order provides that no person is to sell or expose for sale for sowing, or keep deposited in any place for the purpose of sale for sowing, any of the seeds scheduled in the new Order, unless a sample has previously been tested, either by the seller or on his behalf by one of the Government Testing Stations.

Furthermore, no one must sell or expose for sale for sowing any of the scheduled seeds unless certain particulars are given, but particulars do not have to be published merely in respect of seeds kept deposited for sale, although, as above stated, these must be tested. These particulars have to be given to the purchaser in writing at or before the time of sale or delivery. For this purpose they can be given in any form that the seller prefers as, for instance, in an invoice or a printed catalogue or price-list. Also, in the case of seeds exposed for sale, a copy of the particulars must be conspicuously exposed on, or in connection with the seeds. The particulars required by the Order are too lengthy to enumerate, but they include the following:—

1. Name and address of seller.
2. The kind of seeds (also, in the case of cereals, Clovers, and Sainfoin, the name of the variety).
3. The percentage by weight of pure seeds. (This, however, need not be stated in the case of cereals, while as regards field or vegetable seeds, it will be sufficient if the percentage by weight of pure seed is stated to be not less than 97.)
4. The total percentage by weight of certain injurious weed seeds, namely, Docks, Sorrels, Wild Carrot, Yorkshire Fog, and Soft Brome grass. (This, however, need not be stated in the case of cereals.)
5. The percentage of germination by number to be ascertained by a germination test. (In the case of cereals or vegetable seeds, however, it is sufficient to state that the percentage is not less than the Government standard mentioned later.)
6. The month and year in which the test was made, unless made within six months of the date of sale or exposure for sale.

Other details have to be given in the case of Clovers and grass seeds as to the presence of Dodder or Burnet, the proportion of hard seeds, the respective proportions of mixtures, and the country of origin (England, Scotland, Ireland and Wales being treated as different countries for this purpose). The Government officials have power to take samples of the seed, with the right for the seller to appeal to a combined test of the three Government Stations if desired. The Order does not apply to a sale of seeds "as grown" if the seeds are not bought by the purchaser for the purpose of his own sowing nor does it apply to a sale for delivery outside the United Kingdom. Various provisions are inserted as to the size of samples to be taken, and useful definitions are added as to the technical meaning to be attached to the words "germination" and "pure seed." A scale of latitude is also laid down in connection with germination tests, and also as to the proportion of injurious weed seeds. The following schedule shows the seeds to which the Order applies, and also gives the Government standard of germination in connection with cereals and vegetable seeds:—

SCHEDULE.

Kinds of Seeds of which the Sale and Exposure for Sale is Regulated.

PART I.

Perennial Ryegrass, Italian Ryegrass, Meadow Fescue, Cocksfoot, Crested Dogstail, Timothy. Under whatever trade names sold: Red Clover, Alsike Clover, White Clover, Crimson Clover, Trefoil, Lucerne, Sainfoin.

PART II.

Standard of Germination: Wheat, 90; Barley, 90; Oats, 85; Rye, 80 per cent.

PART III.

Tares or Vetches, Field Turnip, Swede, Rape, Fred Cabbage, Field Kale, Fred Kohl Rabi, Mangel.

PART IV.

Standard of Germination: Pea, 75; Dwarf and Broad Beans, 80; Runner Beans, 65; Garden Turnip, 85; Garden Cabbage, 75; Garden Kale, 75; Garden Kohl Rabi, 75; Brussels Sprouts, 75; Broccoli, 75; Cauliflower, 70; Carrot, 60; Parsnip, 50; Beet, 100; Onion, 65 per cent.

INCREASED PRICES FOR SOFT FRUITS.

THE Ministry of Food has increased the price of pulped Raspberries, from July 5 onwards, from £37 to £44 per ton, placed on rail at the growers' nearest railway station. The increased price does not apply to stalked fruits, or to any supplied before July 5, but contracts made for the delivery of pulped Raspberries after July 5 are now cancelled.

The Ministry has also made an Order allowing growers of Black Currants to make an additional charge of £6 per ton for fruits stripped or "strigged" by hand for the jam manufacturer.

NURSERYMEN AND MARKET GARDENERS AND WAR SERVICE.

THE Secretary of the Royal Horticultural Society has received from the Controller of Horticulture the following Memorandum to Agricultural Executive Committees relative to the issue of vouchers to nurserymen and market gardeners:—

"Some doubt appears to exist as to the position of men engaged in market gardening in cases where flowers are grown as intensive crops. The Department desires to draw the attention of the Executive Committees to Paragraph 2 (a) of the Memorandum dated 25th ultimo (No. C.L. 70 L.H.), which governs all such cases and requires an Agricultural Executive Committee to consider whether a man in the trades above mentioned is occupied in the production of food of a character and quantity of national importance. Thus, where a market-grower is mainly devoted to the production of food of a character and quantity which is of national importance, and the growth of flowers forms only a subsidiary business during a few months of the year, when food stuffs cannot be grown, it is within the discretion of the Agricultural Executive Committee to give such a man a voucher."

MESSRS. ELLWANGER AND BARRY.

THOSE who have had business with the leading American nurserymen will be interested to learn that a report is current to the effect that the firm of Messrs. Ellwanger and Barry, of Rochester, N.Y., is to be dissolved. This firm's nursery is the oldest in the Rochester district, and the reason given for the dissolution of the firm is the encroachment of the city upon the nursery ground.

COUNCILLOR J. T. WEST, J.P.

HORTICULTURISTS generally, and Dahlia specialists in particular, will be pleased to learn that Councillor J. T. West, of Brentwood, has been appointed a Justice of the Peace. Mr. West has raised many fine Dahlias. He has been prime mover in the increasing allotments at Brentwood, where he has been a member of the Urban District Council for twenty years.

MEETING OF THE SEED TRADE AT PRESTED HALL.

A MEETING of the seed trade was held at Prested Hall, Kelvedon, Essex, on the 28th ult. Amongst those present were Mr. Prothero, Minister of Agriculture, Sir T. McKenzie, K.C.M.G., High Commissioner for New Zealand, the Hon. Edward Strutt, Lawrence Weaver, Esq., C.B.E., Director of Supplies, Dr. Stapledon (Government Seed Testing Station), and Professor Biffen.

Mr. J. E. N. Sherwood, Managing Partner of Messrs. Hurst and Son, proposed the health of the President of the Board of Agriculture, the

Right Hon. R. E. Prothero, M.P. Mr. Sherwood said Orders had been formulated which may or may not have been advantageous to the seed trade. The Seed-Testing Order, he believed, was a very good Order, and he was sure it would benefit the seed trade in the long run; it applied more to Clover and grasses than to the vegetable and horticultural departments. The allotment movement very closely concerned the seed trade, and it was a very vexed problem as to how the allotment holders were to be supplied. The various societies were banding themselves together as Associations throughout the country; and it was in their interests and in that of the trade to find a satisfactory solution of the difficulty. There was also the question of the price of seeds.

Mr. Prothero said he was grateful to seedsmen for the loyal way in which they had acted up to not only the letter, but the spirit of the Seed-Testing Order. Many at first thought it an arbitrary Order, but he was glad to hear from the leading firms that they recognise it as an Order framed in the best interests of the nation and the seed trade generally. The shortage of seed of the most important kinds had never become really acute. The supply had been well maintained, and this in spite of the fact that we have suffered great losses from submarines, imports of foreign seeds being delayed or interrupted, and the harvest of 1917 at home little short of disastrous. Owing to the foresight and organisation of the trade, the supply had been maintained, and it is an achievement of which the trade may well be proud. A new field was opening up for the seedsman—that of the allotment holder. The Food Production Department had during the past 18 months added over 800,000 holdings to those which already existed. An increased demand for seeds would also be made from other quarters. There was bound to be, as soon as peace was declared, an enormous demand for seeds, not only in the overseas Dominions, but in the Allied countries that are now being devastated by the war, and in the countries of the Central Powers. He hoped that the seed trade was making preparations beforehand for the new demands from these and other sources. Referring to the Plant Breeding Institution at Cambridge, Mr. Prothero stated that the Government proposed to create by voluntary subscriptions an Institute of Agricultural Botany which would take the plants as soon as they were "made" by the Plant-Breeding Institute, and carry them on to the commercial stage. Seedsmen will then be asked to step in and do the distributing side of the business. Seedsmen should be represented on the committee of the Institute. Practical men were needed to indicate to the man of science the directions in which his investigations were most needed, and to prevent waste of time on experiments, which from a practical point of view were comparatively of little use: to turn him—to take an obvious illustration—on to the task of "making" a Potato immune from blight or wart disease. To this Institute the Seed Testing Station would be removed. Toward the founding of the Institute their host had contributed the sum of £1,000, and £1,000 had been given by Messrs. Sutton and Sons.

CROPS AND STOCK ON THE HOME FARM.

PLOUGHING GRASS LAND.

MUCH has been written in the daily press against the enforced ploughing of grass land and not much in favour of the practice. Those who do not agree with the principle of increasing the arable area can easily find cases of ill results. They strengthen their argument by instancing cases which, when investigated, prove to have been done in a half-hearted manner. The subject requires much consideration before drastic alterations are made in the methods of carrying on the farm applicable to any particular locality, and local circumstances of soil and situation.

I advocate the ploughing of grass land which does not produce one ton of hay per acre, or I would first ascertain if it were not possible to make such land give a better yield.

Too many have a belief that a grass field should produce heavy crops of hay annually for say thirty years without giving the ground any manure. Such land is better under the plough, and the chances are that it will get better treatment by the same farmer, because he will realise that something must be done to cultivate the ground better or he will lose by the transaction. Grass land that produces adequate supplies of hay and good feed afterwards for cattle, should not be ploughed, but even such pasture can often be improved by a judicious use of suitable fertilisers.

The growing of satisfactory crops of cereals on newly broken up grass land requires much thought and method of manipulation if success is to follow.

I am bold enough to say that success will be assured in the growth of crops if the right methods are adopted, in spite of the prevalence of wireworms and leather jackets, about which we hear so much at the present time.

As the result of ploughing grass land I have had satisfactory crops of the following:—Tartarian Oats on grass eighty years old; autumn-sown Red Standard Wheat on a twelve-year-old Sainfoin ley; April-sown Red Nursery Wheat on grass nine years old; and Potatos on turf over 100 years old.

A mistake commonly made with cereal crops is to plough too early before sowing the corn. Take spring-sown Oats, for example. Many think the grass should be ploughed in the autumn, allowing time for the turf to decay, and thus aid in feeding the cereal plant. This is the greatest mistake, because such procedure encourages wireworms to attack the Oat plant directly growth commences, whereas if ploughing is deferred until sowing time the wireworm, which naturally is harbouring in the turf, ramifies through this, and by that time the Oat plant has had time to start into growth. If accelerated by suitable stimulants the plant quickly gets out of harm's way, which is after the first pair of leaves are fully developed. The manner in which the plant is induced to start into growth is the crux of the whole question. I have treated this subject somewhat fully because the time is fast approaching when the Government may require more grass land to be put under the plough.—*E. Molyneux.*

Obituary.

ALEXANDER PORTER.—We regret to announce that Mr Alex. Porter, market gardener, Davidsons Mains, Edinburgh, died on the 3rd inst. An Ayrshire man, he served in some of the leading gardens in the south of Scotland, including Foodel (Fife) and Drumlanrig. Over twenty years ago he relinquished his post as gardener at Luchie, Haddingtonshire, and started in business as a market gardener, but he never lost his interest in plants generally. He gave special attention to Montbretias and Michaelmas Daisies, on the growing of both of which he read interesting and valuable papers at meetings of the Scottish Horticultural Association.

GARDENING APPOINTMENT.

Mr. F. W. Miles, for the past 4 years Gardener to A. E. CUMBERBATCH, Esq., Ware Park, Ware, Hertfordshire, as Horticultural Instructor to the Y.M.C.A. in connection with their Training Centre for Discharged Soldiers.

ANSWERS TO CORRESPONDENTS.

ANTS IN LAWNS: *N. S.* Ants are troublesome in gardens; they often carry aphides from one plant to another, and when present in large numbers cause great disturbance of the roots of plants by working in the soil, making it light and dry. The damage they do plants is indirect rather than direct, but children and some older folks often suffer considerably from their bites. Boiling water poured into the ant-hills will kill the pests, but the water should be at boiling-point when applied, and in sufficient quantity to reach the ants while still hot. Where the use of boiling water is out of the question a proprietary preparation such as Ballikinrain Ant Destroyer should be used; this may be obtained from seedsmen and horticultural sundriesmen.

DISPOSAL OF SURPLUS PRODUCE FROM ALLOTMENTS: *J. D. B.* The Food Production Department has recently issued a Memorandum on the disposal of surplus produce from allotments. Apply to the Department for a copy of this Memorandum; the address is 72, Victoria Street, Westminster.

GRAPE SPOT: *H. G.* The spotting and shrivelling of the fruits is due to an attack of Grape Spot (Gloeosporium ampelophagum), also known as Grape Rot, or Anthracnose. Dust the affected Grapes and leaves with flowers of sulphur, and after an interval of ten days, give another dusting, but add a small quantity of quicklime to the sulphur. If the disease is not cured continue the applications at similar intervals, but increase the amount of quicklime on each occasion until the sulphur is only slightly in excess of the lime.

HORTICULTURAL TRADE NEWSPAPER: *J. D.* There are several horticultural trade newspapers, but these circulate only among the traders themselves, and great care is taken to prevent these papers from getting into the hands of retailers and amateurs. If you are going into business, write to Messrs. A. and C. Pearson, Lowdham, Notts; Mr. J. S. Brunton, Hortus Printing Works, Burnley; or Mr. T. Want, Hatton House, Great Queen Street, W.C., for particulars regarding the trade papers they publish.

ONION MILDEW: *K. S. H.* The disease from which your Onions are suffering is the common Onion Mildew (Peronospora Schleideniana). This complaint more often attacks spring-sown than autumn-sown crops, but in either case it may be kept in check, if not entirely prevented, by means of frequent applications of lime and sulphur, dusted upon the plants while they are moist with dew. Use one part of lime to two parts of sulphur. Spraying the young Onions with potassium sulphide solution—half an ounce of sulphide dissolved in one gallon of water—is a good preventive measure. In districts where Onion Mildew is a prevalent disease, and especially in gardens where there have been severe attacks, it will be found good practice to provide a new plot for the Onion crop each year.

NAMES OF PLANTS: *W. J. H.* Circaea lutetiana (Enchanter's Nightshade).—*W. J. W.* Fraxinus excelsior var. heterophylla, sometimes known as F. excelsior var. monophylla—the One-leaved Ash.—*B. B.* Lilium Martagon.

WILLOWS FOR COMMERCIAL PURPOSES: *C. F. C.* The Willows most suitable for the position you describe would probably be forms of Salix viminalis and S. triandra. There are numerous forms of each species grown for basket-making, and of the many, those of S. viminalis called Long Skin or Long Skein, and the form of S. triandra known as Stone Rod, should be tried. It is not advisable to plant one kind only, for in the event of the one suffering from any cause and failing to produce a full crop of rods, the other may escape. Each kind must, however, be kept separate. The ground should be well cultivated before planting, and kept clear of weeds afterwards. When planting place the Long Skin variety 20 inches apart each way, and the Stone Rod 18 inches apart each way. You may be able to obtain cuttings of these varieties from Mr. W. P. Ellmore, The Willows, 3, Saxe Coburg Street, Leicester. This grower would also be able to advise as to whether any other varieties would be more suitable than those named for the position in question. The Board of Agriculture and Fisheries publishes a useful pamphlet on the Cultivation of Willows. It can be obtained, price 2d., from the Secretary, Board of Agriculture and Fisheries, 4, Whitehall Place, London, S.W. 1.

Communications Received.—Mrs. A. K. B.—L. S. A.—Mrs. H. G.—W. R.—E. A. B.—B. A. of T. & T. J.—H. M. V.—Miss E. L.—J. B. sl.

THE
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CONTENTS.

ILLUSTRATIONS.

CULTIVATION OF CYCLAMENS.

THE florists' Cyclamen may be had in flower from the end of November till late in April, provided that suitable strains are grown and proper methods of cultivation are practised. In well-grown plants the beautiful foliage and long range of distinct colours are much admired, and the plants lend themselves to all purposes of decoration. What could be more beautiful and effective than a tastefully arranged grouping of batches of these plants arranged according to colours, commencing say, with *Salmon Queen, soft salmon-pink; *Princess May, beautiful pink; *Rosy Morn (giganteum var.), delicate rose tinted; *Mont Blanc (giganteum var.), pure white, with large flowers, perhaps the best of all white; Mauve Queen (giganteum var.), a robust grower; *Salmon King, the best of all salmon varieties, very free flowering, with large flowers and beautiful foliage; Surrey (giganteum var.), a lovely deep pink, with claret base; *Brilliant (new), giganteum variety, with fiery-crimson flowers of great size; Dame Blanch (giganteum var.), pure white, with exceedingly large, broad petals; Duke of Connaught, purplish-crimson, an excellent grower, and free-flowering variety (a general favourite in America); Duke of Fife (giganteum var.), flowers very large and of rich rose colour; Queen Mary (new), large salmon pink flowers, very free flowering, with beautifully marked foliage, very distinct; picturatum (giganteum var.), the first variety to receive an Award of Merit, although raised over 40 years, and still a popular variety, free flowering, and having beautiful light rose tinted flowers, with claret base; Excelsior (giganteum var.), white with purple base, exceedingly large flower; and grandiflora alba giganteum, a strong grower and perhaps the largest white variety grown.

The variety *Mrs. L. M. Groves is certainly one of the finest yet raised, and is a beautiful and well built flower, of a rich gorgeous salmon-scarlet; its free flowering qualities are remarkable. It is undesirable to convert this variety into a perpetual flowerer, therefore it is forced into its well-earned rest (in the case of growing old corms). The rich, warm scarlet tone highly recommends it for table decoration. The flowers are exceedingly large, and produced from self supporting flower-stems, surrounded with a beautifully marked and distinct foliage.

*St. George's Salmon, the well-known silver leaved variety, was first introduced to the public by Messrs. Sutton and Sons, in 1915. Since then this variety has undergone great improvement both in foliage and quality of flower. The leaves are most beautiful and ornamental in themselves and an additional attraction to the beautiful salmon-coloured flowers. The variety when first introduced was found somewhat difficult to cultivate, and comparatively few gardeners succeeded with it. The strain is so much improved that the plants are almost as vigorous as the giganteum varieties, and the leaves are distinctly marked with silver inlaid with an "Ivy leaf" of dark sap green in the centre and surrounded with silver steel colour, so perfect in appearance that it might have been laid on by the brush of an artist. In addition to St. George's Salmon, a novelty has been raised with a very vivid crimson flower, a good decomposition, having the magnificent decorative foliage of St. George's Salmon. The variety received the R.H.S. Award of Merit under the name of "Crimson St. George's," and in due course will be introduced to the Cyclamen enthusiast.

The first essential before sowing Cyclamen seed is to select a superior strain; no matter how zealous the grower may be, he will never cultivate to perfection an inferior strain. The numerous named varieties are the offspring of Cyclamen latifolium, introduced from Persia in 1731. England was the first country to take up seriously the cultivation of the Cyclamen, but no improvement in strain is recorded until about 60 years ago. Previous to the war Germany made a great effort to monopolise the Cyclamen seed trade of this country, and German seedsmen have distributed throughout the country a strain of inferior quality. The year previous to the war they introduced a so-called new Cyclamen, also one dissected variety, which, on trials under most adverse conditions, proved worthless. Her scheme was to flood the market with cheap seed, and thereby handicap the specialists of the country who aim at the development of perfection in the Cyclamen.

SEED SOWING.

The best time to sow the seed is from July till the end of August. It is completely wrong to sow in spring, as if the sowing is delayed till then there is a loss of valuable time. The method of drying off the corms in summer was once thought a good plan, but this has now been abandoned by all good cultivators. The question of sowing the seed is most important, and if the grower is to succeed he must observe thoroughness from the commencement. Cyclamen seeds cannot be forced into germination if they refuse to move at my pace but their own. Unsuccessful growers may trace their mistakes to one or other of the following stages: Sowing, pricking off, first potting, final potting, watering, ventilation, or feeding. Immediately the Cyclamen is checked in its development disaster follows, and whilst many plants may recover owing to the attention of the cultivator, others will die. It sometimes happens that the seed germinate in the seed pans, and a few fail to germinate, or they germinate very poorly, only 10 or 20 per cent., and the conclusion is that the seed supplied was either bad or "old." This may be true in some cases, but it may be interesting to many of the readers of the *Gardeners' Chronicle* to learn that the old seeds in the case of Cyclamens germinate more satisfactorily than new. The Cyclamen specialist always prefers to sow seed two or three years old; indeed, it has been proved that Cyclamen seed seven years old, if properly stored, will germinate satisfactorily.

To have Cyclamens in flower during November the seed should be sown early in July. Proceed by preparing a compost of 3 parts fibrous loam and one part decayed Oak leaves. If the loam is light in nature, and contains a good percentage of sand, do not make the compost too light by adding more sand; the grower's discretion must be used as regards the nature of the loam. The best quality loam for Cyclamens is to be obtained from the famous Wealden Heath, Surrey. The Oak leaves should be gathered during the winter prior for use. Gather the leaves as they freshly fall from the trees, place them in bags or boxes, and dry them over the [illegible]. When in a fit condition to use [illegible] crumble in the hand when [illegible]. Pass both soil and leaves through a [illegible] mix them thoroughly together. Use [illegible] pans, clean and well crocked and [illegible] some rough material to prevent the fine soil choking the drainage. Fill the pans [illegible] moist and press it moderately firm. When large quantities of Cyclamens are grown [illegible] be equally distributed over the [illegible] but where a less quantity is required [illegible] to be placed one inch apart each way. Cover the seeds into the surface, and cover them with the same compost about ¼ inch deep. It is a great mistake to place the pans on shelves in a heated house, for disaster is sure to follow. This reminds me of an unsuccessful grower who placed the seed pans on the shelf of a Cucumber house, naturally the seeds refused to germinate, and a complaint was made to the seedsman, who consulted his grower, and was satisfied that the seeds were in splendid condition. The remaining seeds having been handed over to the grower were immediately sown. Later on all the seed germinated, and when large enough to handle the seedlings were forwarded to the purchaser, who, perhaps, was unaware that the seedlings were the result of the returned seeds. After the seeds have been sown, place the pans on a coal ash or gravel bottom in an unheated greenhouse or frame, cover them with sheets of glass, and over them place paper to exclude the light. Never allow the pans of seed to become dry, and when giving water this must be done through a very fine rose. Cyclamens dislike hard water; it is therefore a very important factor to have a good supply of soft rainwater. *J. H. Forsyth.*

(To be concluded.)

ORCHID NOTES AND GLEANINGS.

ODONTOGLOSSUM GATTON PRINCESS.

A NOTE on this very remarkable hybrid, raised in the gardens of Sir Jeremiah Colman, Bart., Gatton Park, Surrey (for Mr. J. Collier) between O. Queen of Gatton (triumphans × percultum) and O. eximium (ardentissimum × crispum), was published in *Gard. Chron.*, June 17, p. 242. The chief character of variation in plants of the same batch was referred to, one set approaching O. triumphans in the main features, with O. crispum for a base, the diffused arrangement of the colours in the other set, and the crest of the lip, being easily traceable to O. Harrysianum. Those three species give the dominant characters, although the white O. Percultum appeared three times in the lineage. Sir Jeremiah Colman kindly sends six more blooms taken from a batch of twenty-five now in flower, no two flowers are alike, but all are good.

The six may be divided into two sets of three, the variety with light ground colour (see upper flower, fig. 8) represents the class in which the white of O. crispum predominates with a shade of yellow towards the margin derived from O. triumphans, which also shows in the two bladed crest of the lip and the dark chestnut red blotch in front of it. The other two forms of this class are marked in the same manner, but with a different arrangement of the blotches, which in all three are shades of reddish-purple.

The flowers of the other set (see lower bloom in fig. 8) have diffused colour, and show more of the characters of O. Harrysianum, especially in the fimbriated character of the crest.

* The varieties marked thus * have received the R.H.S. Award of Merit.

The variety illustrated is the lightest in colour of the three, the tint being light claret-purple with lilac markings and tips to the sepals and petals, the lip being blotched with dark claret-red. The next darker form is dark claret-red with smaller lilac markings on the segments, and the third, while showing a few white transverse markings on the sepals and petals, has colouring of a still darker hue.

ODONTOGLOSSUM GATTON EMPEROR

SIR JEREMIAH COLMAN, in his letter, remarks: "But if Gatton Princess has proved variable, Gatton Emperor (Lambeauianum × hybrid unrecorded) has proved still more so. I am sending you four flowers of plants of this cross all arising out of the same seed-pod. You will probably remember the one which gained an Award of Merit (R.H.S., Feb. 12, 1918), which had a self purple ground, hence the name Purple Emperor, so they vary from almost wholly pure white

FIG. 5. VARIATION IN HYBRID ODONTOGLOSSUMS OF THE SAME PARENTAGE. (O. QUEEN OF GATTON × O. EXIMIUM.)

to a deep purple, and one or two are brown. Unlike Gatton Princess, there have been some really bad ones amongst them; in fact, there have been all sorts of shapes, sizes and colours." The flowers sent include a large, pure white bloom with four violet spots and some marginal markings around the crest. This may be likened to a fine, enlarged O. Pescatorei, and can only be derived from the O. Pescatorei in O. Rolfeae (one of the parents of O. Lambeauianum), and suggests that that species may also be in the unknown hybrid used. Another resembles O. crispum purpurascens (illustrated in *Gard. Chron.*, April 13, 1901, p. 233), with its dense spotting on pale lilac ground. The other two are reddish-purple with white margins and tip.

These examples show the extraordinary complication which has arisen in cross-breeding Orchids and the impossibility of identification by means of a single flower, as blooms of quite dissimilar crosses frequently approach each other. In studying them the reasonable method is to work out the distinct species originally used in their production, which, as in the cases now remarked on, can be well traced.

TREES AND SHRUBS.

NEW CHINESE LILACS.

MANY of the Lilacs discovered by Mr. E. H. Wilson and other travellers in the recent explorations of western and northern China are now so well established in the Arnold Arboretum and in a few other American gardens that it is possible to form an opinion of their value. Observations of the living plants show that too many species were made when botanists had for diagnostic purposes only the dried specimens sent home from China. According to the *Bulletin of Popular Information*, Vol. IV., No. 7, issued by the Arnold Arboretum, now that most of these plants have flowered in the Arboretum and have been again studied, it appears that Syringa Wilsonii and S. Dielsiana are the same as S. tomentella; that S. Sargentiana is a variety of S. Komarowii with a pubescent calyx; that S. tetanoloba is S. Sweginzowii (see fig. 11), and that S. Rehderiana is probably only a pubescent form of S. tomentella. S. Komarowii Sargentiana is not in the Arboretum collection and probably has not been introduced. S. Rehderiana, S. Potaninii and S. verrucosa are still unknown in gardens. As a garden plant the handsomest of the new Chinese Lilacs is Syringa reflexa, which Wilson discovered in western Hupeh. This is a tall, broad shrub with leaves resembling in size and shape those of S. villosa. The flowers have long, slender corolla-tubes and are borne in long, wide-branched, open, drooping clusters; the flower-buds are red, but as the flowers open the corolla becomes dark rose colour except the inner surface of the lobes, which is white. The wide, drooping clusters, and the contrast in the colours of inner surface of the corolla-lobes and its tube, make S. reflexa one of the handsomest and most interesting of the new Chinese Lilacs.

Next in merit probably as an ornamental plant is Syringa Sweginzowii. This, too, is a tall shrub, but the branches are not so stout as those of S. reflexa, and the leaves are narrower, pointed at the ends and pale on the lower surface. The flowers are produced in broad, erect clusters, are pale rose colour and half an inch long. The flower-buds are of a peculiar brownish-green colour, and as the flowers open gradually from the bottom to the top of the cluster the contrast between the open flowers below and the closed buds above give this plant a peculiar appearance during the week or ten days the flowers are opening. This Lilac was first made known through plants raised in the Arboretum of Max von Sivers at Riga, in Russia, from seeds sent from some place in Mongolia or Northern China, the name of which is not recorded. Later it was found by Mr. E. H. Wilson in Western China, but the plants growing in the Arboretum were obtained from the nursery of Regel and Kesselring in Petrograd. S. Komarowii has leaves which resemble those of S. reflexa, but the flowers are produced in short, compact, nearly cylindrical clusters nodding on long stems. The flower-buds are bright red and very conspicuous, and the open flowers are deep rose colour. This Lilac sometimes blooms profusely when still a small bush.

Syringa tomentella promises to grow taller than the other new Chinese Lilacs, for some of the plants in the Arboretum are now nearly 10 feet high. The leaves resemble those of S. villosa, and the flowers are pale rose colour or white, and are borne in narrow, erect clusters. None of the Arboretum plants has produced many flowers, and S. tomentella promises to be one of the least desirable of the new Lilacs as a garden plant. Syringa Julianae flowers earlier than most of the new Chinese Lilacs. It forms a compact, low shrub nearly as broad as high, and for several years the specimen in the Arnold Arboretum has covered itself with short clusters of rose-coloured and white, fragrant flowers. Related to the Chinese S. pubescens, it blooms much later than that and other related species, and is an excellent addition to the list of Lilacs which can be grown in gardens.

Syringa Wolfii, which has dark purple flowers in short, compact clusters, is another good garden plant in America. This species, too, was first cultivated by Von Sivers at Riga, who obtained it from some place in Northern China which is not known. The other new Chinese Lilacs in the Arboretum, S. Meyri, S. microphylla, S. pinnatifolia and S. yunnanensis, have comparatively little decorative value, and are curiosities rather than good garden plants.

FRUITING OF FICUS RADICANS VARIEGATA.

CLIMBING species of Ficus, grown for the beauty of their foliage, are seldom seen in fruit, because they are mostly grown as small plants in pots, instead of being planted out and allowed to attain the adult stage, when they develop arborescent branches, with a different type of foliage. The fruiting form of Ficus radicans variegata was shown at a recent meeting of the Royal Horticultural Society by Mr. L. R. Russell. Although grown in a pot of moderate dimensions, the branches were stout and self-supporting, not pendent. The leaves were 3-4½ inches long, 1½-2½ inches broad, and leathery, but not rugose like the corresponding form of F. stipulata. The fruits were larger than Peas, oblate, and green or variegated, just as Acer Negundo variegatum habitually is. The plant had been fruiting for three or four months before it was shown. *J. F.*

THE ROSARY

SOME NEW ROSES.

Of the dozen or so new Roses which found their way into my garden for the first time last autumn, one of the most pleasing has been Lamia (see fig. 91), which received a Gold Medal at the recent N.R.S. Show at Regent's Park, where it was particularly well shown by Mr. Easlea, the raiser. The variety has a vigorous habit of growth, branching and growing well as a cutback. The colour of the flower first opened somewhat resembles that of Lady Hillingdon, but the tone deepens as the flower develops, and it comes to look like a deeper Mrs. A. R. Waddell; the colour, that we may be described as a deep orange-yellow. The flower is essentially of the decorative type, and [illegible] about the same degree of fulness as Mrs. A. R. Waddell. It is, however, very shapely when young, and [illegible] and [illegible] in the garden is [illegible] brown flower stems, [illegible] foliage, [illegible] seem to set off the colour of the flower by the contrast of orange against brown. The thinness and consequent [illegible] of the blooms is its chief defect, for like Lady Pirrie and Roses of that type, when [illegible] the flower goes to pieces. Plants [illegible] over, so that a [illegible] garden, could do well to give the new variety a trial.

Gorgeous, brought out by Messrs. Hugh Dickson, Ltd., two years ago, I [illegible] curiosity in its way. I have only a single plant but it has grown well and produced many flowers of all sorts of colouring. Some have been nearly yellow, others nearly pure pink, and others intermediate shades. The bloom is well shaped, usually of the Mme. Leon Pain build of flower, but often larger and more [illegible] blooms are of sufficient merit for the front row of the exhibition box. The growth seems vigorous and good, and the plant may in the bedding [illegible] prove useful for bedding purposes. Down to the present it has seemed free from disease, but it is the autumn that puts Roses to the test in this respect. If it is as successful through the autumn as it has been in early summer, it should obtain a fair place as a bedding variety.

The new variety Queen Mary has bedded particularly well this summer, and, when at its best it is a Rose of much charm. The colour is a curious mixture of pink and cream which is very delicate in the freshly opened flower. It is true that the growth is not remarkable for vigour. The statement made by a critic at the recent Rose show that the plant will not grow as perhaps exaggerated, but the Rose is not as strong as either of those above mentioned, and, moreover, it is not very good in wet weather. The result has been that my plants of it have in past years been somewhat neglected, but this season has suited them well, and they have produced a few very pleasing flowers, the combination of pale lemon-orange and pink in the flower being very attractive. It is purely a decorative variety, and one would not expect to see it in an exhibition collection.

Paul's Lemon Pillar was particularly good in the early part of this summer. It is a Rose of great merit, for it has the attribute that each flower is beautifully formed and most attractive. Now that we obtain so many new varieties annually this attribute is becoming increasingly important. Garden room is precious, therefore space can no longer be provided for plants of those varieties which only occasionally produce a perfect flower. *White Rose.*

ON INCREASED FOOD PRODUCTION.

TRIAL OF EARLY POTATOS.

I HAVE made a trial of twelve varieties of early Potatos this season for the purpose of discovering the best for our dry, sandy soil. The seed tubers were all planted on March 25, and under precisely the same conditions in land that had previously been cropped with Onions and early Peas. After having been trenched and heavily manured the ground received a dressing of soot and a sprinkling of manure from an old hotbed. The results are as follows: Myatt's Improved Ashcroft, a poor crop, small haulm; Lady Lonsdale, poor crop, moderate haulm; Duke of York, fair crop, good sort; Express, poor crop, small haulm, weak; Epicure, good crop, fairly strong haulm; Early Rose, good crop, haulm strong; Snowdrop, fair crop, haulm strong; Sharpe's Victor, good crop, haulm strong; Eclipse, medium crop, small haulm; King George, good crop, haulm strong; Midlothian Early, fair crop, good tubers, haulm strong.

The old Early Rose was by far the best and gave the largest tubers and heaviest crop. Snowdrop was an excellent second, and Duke of York a good third. I should add that a sample of all the varieties was dug and the Rose, with the above results. Of the other varieties grown here Arran Chief is very prominent and is the strongest and most vigorous of late sorts. King Edward is not so vigorous as last year. Up-to-Date is very strong and healthy. A large plot of Snowdrop, in a field, [illegible] great promise, as also does Epicure. The soil in those gardens is extremely light, resting on the Bargate rock, which is 5 to 10 feet below the surface. *W. A. Cook, Abbot's Wood Gardens, Godalming, Surrey.*

CLIMBING HARICOT BEANS.

I HAVE, under certain conditions, Climbing Haricot Beans can be ripened for winter use. I never [illegible] any doubt, for I observed the development of it to which Mr. Bartlett alludes [illegible]. At the same time there is many [illegible] have experienced, with bad seed. I [illegible] question to an expert, and his opinion [illegible] was most likely due to the method of drying adopted. However, [illegible] seedlings under glass I have [illegible] but could probably have had

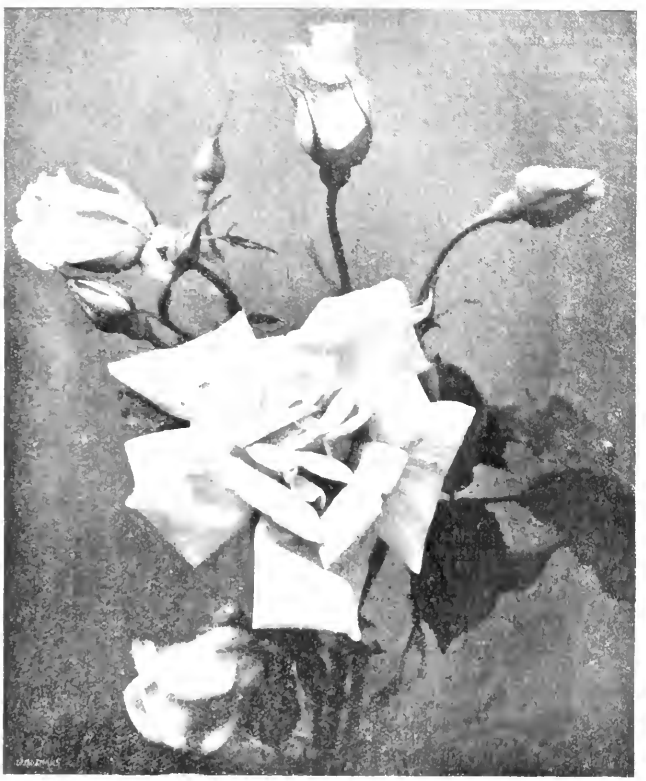

FIG. 91.—ROSE LAMIA (GOLD MEDAL, GRAGE YELLOW).

[illegible] ground had not been mulched. My soil is of poor quality and dries quickly, so there will be no struggle for supremacy between the two vegetables. It seems easy to say what can be done with a piece of ground before it is seen, but 4 to 6 inches of soil overlying solid gravel, and as dry as dust during the middle of March, is liable to create misgiving as to its capabilities.

I still think I did right in giving Potatos the first place for the first year of grass land, and so far they have justified my decision. Most of the ground presents a dark green appearance owing to the presence of Potatos as the principal crop on the 3 acres put under cultivation. The influence of weather on crops is greater than that of manure, which has had no effect for two months owing to lack of moisture in the soil. My third sowing of Climbing Haricot Beans, made 14 days later than the last, promises to

outstrip the first because the seeds were planted in deeper soil, containing more humus. All have an equal share of light and warmth. Plants of the third sowing have rather less air, but the fourth requisite to the vigorous growth of plants—moisture—has been deficient. *J. F.*

LEEKS.

OWING to the prolonged drought the Onion crop this season is certain to be light, and in order to make up for the deficiency increased space should be allotted to Leeks. Generally the seed has been of high germinating quality, so there should be ample seedlings available. Like practically all plants, the Leek pays for good cultivation, although for ordinary purposes the methods of the grower for exhibition are not necessary. On light soils it pays to make trenches as for Celery, though not so deep nor so wide. Trenches to take two rows of plants will be found the most convenient for working, though some of the older experts often recommended a larger size. John Abercrombie thought trenches to accommodate six rows of plants at 6 inches apart the best, but this width is rather unwieldy, and the plants would become too crowded. Better results are to be obtained by allowing 9 inches from plant to plant. If well-decayed manure of any sort is available a layer at the bottom of the trenches will give good results. On stiffer lands there is much to be said in favour of the method of dibbling deep holes on the flat and dropping a plant into each hole. One watering will ensure a sufficient covering of soil over the roots, and the stems will become blanched as they grow, but care must be exercised to make the holes sufficiently deep; 9 inches should be the minimum depth. Where worms abound the leaves of the seedling Leeks should be trimmed before they are planted, otherwise the worms will drag them into the ground. On rich soils Leeks grow so robustly that they should be allowed 12 inches from plant to plant. The general impression amongst writers seems to be that Leeks are much more popular in the North than amongst gardeners of the southern counties. Whatever may have been the case in the past this is scarcely now correct. Very large areas of Leeks are grown by market gardeners in most of the London suburbs, and it is rare to find southern allotments or cottage gardens without due proportions of Leeks in their season. In Cornwall the Leek has long been one of the most important vegetables with the cottager, who, realising the value of high feeding of the plants, usually grows them exceedingly well. *A. C. Bartlett.*

CARROTS

To make certain of a good supply of Carrots for winter and spring, a sowing should be made of a stump-rooted variety. A good dressing of soot should be worked into the soil, and the seed sown thinly in drills 9 inches apart. If the soil is fairly moist at the time of sowing it is not long before germination takes place; a free use of the Dutch hoe helps the seedlings to make headway. Thinning should be done when the seedlings are large enough to handle, dusting the foliage with soot to ward off attacks of the Carrot fly. Many growers prefer to leave Carrots sown this month unthinned, but should a period of dry weather occur the roots will not grow to a serviceable size before the growing season has finished. *C. Davis, Holy Wells Park Gardens, Ipswich.*

THE ROYAL HORTICULTURAL SOCIETY AND FOOD PRODUCTION.

THE Society is continuing the good work referred to in these columns on previous occasions. During Whitsuntide the special exhibition of models, insect and other pests, tools, Haricot Beans, and literature, was displayed at the Food Control Bureau at Bournemouth, where Lord Grimthorpe, the President of the Society, opened the proceedings. There was an average attendance of about 700 visitors per day, and Mr. C. H. Curtis, who was in charge, answered questions and gave short talks that were of special interest to allotment holders. From Bournemouth the exhibition was conveyed to Southall, Middlesex, where the allotment movement has developed very extensively. Here the attendance was about 300 per day. Lady Rhondda opened the proceedings, and spent some considerable time inspecting the Society's exhibit. From Southall the exhibition was taken to Ludlow, and later to Smethwick, Mr. W. H. Divers having charge of the arrangements. The next centres visited were Torquay and London (Selfridge's).

PLANT NOTES.

RHODOSTACHYS ANDINA.

RHODOSTACHYS ANDINA is an ornamental Bromeliad, whether grown indoors as a greenhouse plant or out-of-doors as a tender plant for a warm corner. In the Cambridge Botanic Garden it does well under both methods of

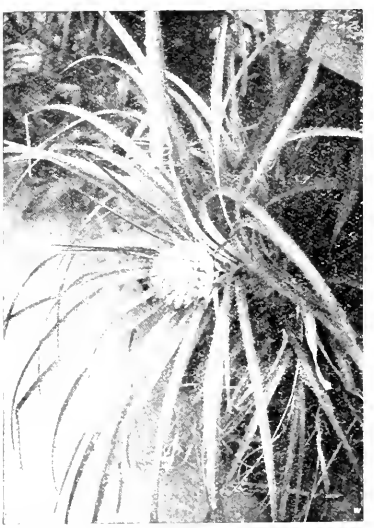

FIG. 10.—RHODOSTACHYS ANDINA FLOWERING IN THE SUCCULENT HOUSE, BOTANIC GARDEN, CAMBRIDGE.

treatment, but specimens out-of-doors with many crowns do not require to flower freely. Indoors the plant has flowered on various occasions.

The specimen illustrated in fig. 10 is growing under the bench of the central stage of the Succulent House. In this position it does perfectly well, and it is one of the numerous plants that can be grown under a stage, thus saving the space above. The habit of the plant is well shown in the illustration. The leaves have a silvery appearance, becoming glabrous down the upper surface, while remaining white-lepidote on the underside. They are armed with very sharp spines. The inflorescence consists of a dense globose head, about 3 inches in diameter; the outer bracts are spine-margined and slightly tinged with red, the calyx segments lanceolate and white, the petals bright pink and about an inch long. The stamens exceed the petals, and have bright yellow anthers. The plant is Ruckia Ellemetii of Regel's *Garten Flora*. In the same conditions, both in and out-of-doors, R. litoralis and R. pitcairniaefolia succeed very well. All the species are native of Chile. *R. Irwin Lynch.*

The Week's Work.

THE KITCHEN GARDEN.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey

CABBAGES.—The most suitable time for making the earliest sowing of Cabbage varies in different localities, but it should be made between this date and August 10. Harbinger is possibly the best sort to sow first, followed by such varieties as Ellam's Early, Flower of Spring, and Early Offenham. Another excellent Cabbage is Emperor; the heads of this variety quickly turn in and are of excellent quality. Where large quantities are grown it is well to make three sowings at intervals of ten days. Sow the seed thinly in rows made 9 to 12 inches apart. Where birds are troublesome protect the seeds with nets and shade the beds with green boughs until the plants are well through the soil, but afterwards gradually expose them fully to obtain sturdy specimens.

TOMATOS.—If a regular supply of Tomatos is needed during the winter, the plants should be ready for transference to their fruiting-pots by the end of August. Late-raised plants grow weakly, and in any case the fruits of such plants fail to set freely during the late autumn and winter. Few varieties equal a good type of Winter Beauty, which is of moderately vigorous growth, flowers freely, and sets its fruits well. Grow the plants on in a light position near the roof-glass.

CUCUMBERS.—The end of July is a suitable time for sowing Cucumber seeds to raise plants for fruiting up to Christmas. Use a light compost and grow the plants in a warm house, although fire-heat is not needed for this crop until September. Grow sturdy plants, and give the roots plenty of pot-room to keep them steadily progressing until a pit is ready in which to plant them; where the pit has been occupied by Melons it should receive a thorough scrubbing and cleansing.

SPINACH.—Make further sowings of Round and Prickly Spinach in drills drawn 18 inches apart on ground which has been cleared of early Potatos. Many of the plants will give a supply of leaves through the autumn, and some will stand the winter. Further larger sowings should be made at short intervals.

LETTUCES AND ENDIVE.—Continue to transplant seedlings of these salads, allowing the plants a distance of 1 foot apart each way. Make further sowings of All-the-Year-Round and Hicks' Hardy Lettuces to furnish plants for cutting during the autumn and winter. Further sowings of Batavian Endive should be made and plants from earlier sowings transferred to cold frames as required.

HERBS.—Most kinds of herbs are ready for drying. The shoots should be cut when in flower and dried gradually by spreading them out in a cool, shady place. They should be tied in bunches afterwards and hung in a similar position, where they will be free from dust and dirt.

THE HARDY FRUIT GARDEN.

By JAS. HUDSON, Head Gardener at Gunnersbury House, Acton, W.

SUMMER PRUNING.—Summer pruning needs to be done with considerable caution, or it will result in autumnal growth that will defeat the object in view. Every variety and its peculiarity must be understood. As an instance, Waltham Abbey Seedling Apple is disposed to form fruit-buds at the terminals of the current season's growth. It is simply waste of time to cut back the wood each summer and have no good results. In such a case, when summer pruning was forgone, and extension of growth allowed, fruit-buds were formed and good crops resulted. Take note now of all fruit trees growing too luxuriantly, and mark these for root-pruning in the autumn. What applies to

some Apples and to Pears on a free stock also applies to Plums; the summer pruning of the Plum is often carried to an excess that is not justified. On light or on shallow soils the beneficial result of summer pruning may be more apparent than on heavy ones. The removal of weakly wood should first receive attention and then the growths which cannot be considered important, but do not cut away all useless or superfluous growths at one and the same time. If any system of pruning adopted in the past has not been productive of good results, try another system. Pendulous growths, if encouraged, often prove fertile.

WATERING WALL FRUIT TREES.—Providing wall-fruit trees with moisture is an important item of work at this season, especially where good crops of fruit are being ripened. It will pay to mulch the border close up to the wall when the crops are heavy, for when the border slopes away too freely the soil frequently cracks. Clear water will suffice, unless it is seen that the growth needs some stimulant. In conjunction with watering in hot weather a free use of the syringe or garden engine, towards the evening, will be beneficial. Bear in mind, where syringing is practised, that there is now one hour's difference in the time, and what could be done at 4 o'clock cannot now be attended to until 5 o'clock. Keep a sharp watch for insect pests, and do all that is possible to exterminate them in good time.

PLANTS UNDER GLASS.

By E. HARRISS, Gardener to Lady WANTAGE, Lockinge Park, Berkshire.

SMILAX.—If a suitable place is available in which to cultivate this plant, a good batch should be grown annually. Smilax is especially valuable for decorative purposes during the winter. The back wall of a late vinery is an ideal place for growing this plant, and it will grow satisfactorily in fruit houses. The plants may either be set out in a narrow border or grown in boxes. See that ample drainage is provided, and do not use a very rich compost. Strands of fine green twine may be fixed the whole length of the wall on which to train the long shoots. When in active growth constant attention must be paid to training the young growths, or they will quickly become hopelessly entangled.

EUPHORBIA PULCHERRIMA (POINSETTIA).—Any plants of Poinsettia still to be repotted should be attended to forthwith. If tall plants are desired they should be grown in a warm, moist atmosphere for the next few weeks, and afterwards accustomed to cooler conditions. Plants growing in cool houses or frames should not be exposed to cold draughts. Poinsettias may be grown in cold frames if great care is exercised in admitting air.

EUPHORBIA JACQUINIAEFLORA. For ordinary use this plant is best grown singly in 5-inch pots, but large specimens may require pots 8 or 10 inches in diameter. Their cultural requirements are similar to those recommended for Poinsettia, except they need a fairly high temperature throughout their growing season.

THE ORCHID HOUSES.

By J. COLLIER, Gardener to Sir JEREMIAH COLMAN, Bart., Gatton Park, Reigate.

EPIDENDRUM PRISMATOCARPUM.—This species may need attention at the roots when it has passed out of flower. The most suitable receptacles are deep pans. Specimens that are pot-bound, and, having grown over the sides, are bare in the centres, should be turned out of the pans, for the purpose of removing most of the back pseudo-bulbs, leaving only two or three behind each lead. They should then be repotted, placing them so that the growths point to the centre. Those that have sufficient root space for another season's growth, and are otherwise in good condition, should have some of the old material removed from the surface, and be given a top-dressing. After repotting or top-dressing, give water with great care, and never allow moisture to settle in the centre of the new growths, as this will cause decay at the base. When the roots have grown well into the new compost, afford water liberally until the pseudo-bulbs have completed their growth. This species grows well in the lightest and coolest part of the Cattleya house.

EPIDENDRUM BICORNUTUM (SYN. DIACRIUM BICORNUTUM) AND HYBRIDS.—These plants are difficult to cultivate well for many years in succession. At the present time, just before the new growths develop roots from their bases, they should, if necessary, be repotted. Shallow pans form the most suitable receptacles, and these should be well drained. During the growing season, liberal supplies of water are needed, but later, when the pseudo-bulbs are fully developed, the supply should be gradually diminished, and, during their resting season, only a very small amount will be required. The plants grow best if suspended or staged near the roof-glass in the warmest Orchid house, or in an ordinary plant stove.

FRUITS UNDER GLASS.

By W. J. GUISE, Gardener to Mrs. DEMPSTER, Keele Hall, Newcastle, Staffordshire.

MELONS IN FRAMES.—The very cold nights experienced during the past fortnight may have retarded the growth of Melons in frames, but it advantage is taken of the present bright weather, by syringing the plants lightly and closing the lights early in the afternoon, no harm will result. From leading growths to within the back and front of the frame, two each way are sufficient, and pinch out the tips when they have nearly reached the sides. These leaders will produce laterals in abundance, most of which will give fruit, but the essential point is to keep these laterals thinned so as to admit light and air to those retained. Pollinate the flowers daily, as it is very important to secure a quick set at or about the same time, or only the most forward fruits will swell. Retain three or four of the most promising and best situated fruits, as these will be quite enough for one plant. The fruits should be kept off the soil by pieces of board or tiles to keep them from the soil. When it is necessary, tepid water should be given in the forenoon, but avoid wetting the "collars" of the plants. Warm, diluted liquid manure, light sprinklings of concentrated fertilisers or top-dressings of turf and manure, in equal proportions, should be afforded the roots when the fruits are swelling. Pinch out any fresh growths to prevent overcrowding, syringe the foliage freely and close the frames early.

CUCUMBERS IN FRAMES. The important point in growing Cucumbers in pits or frames is to keep the plants well supplied with moisture, but cold, sloppy conditions in the frame are harmful. In bright weather syringe the plants twice daily and close the frames early in the afternoons directly after the final syringing. A mere fraction of ventilation may be allowed to remain on all night during warm, sultry weather, to allow superfluous moisture to escape. Twice weekly all the shoots should be pinched to one leaf beyond the fruit, and any unnecessary growths or fruits removed to admit light and air. As the roots appear above the surface give light top-dressings of loam and decayed manure or leaf-mould. Warm, diluted liquid manure or light sprinklings of concentrated fertilisers are excellent stimulants for plants carrying good crops. Young frames must still be utilised to provide a successional supply.

THE FLOWER GARDEN.

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

ENGLISH IRISES.—It is, perhaps, not generally known that English Irises succeed best when the plants are raised from seeds, and where the bulbs are apt to die without any apparent reason it will be found that seedlings, frequently raised, will give excellent results. Instead, therefore, of removing all seed pods after the flowers are over, a few should be reserved for propagation, and the seeds may be sown as soon as they are ripe. The plants are absolutely hardy, and the seeds only need to be sown thinly in the open ground and the seedlings left for two years before transplanting. Even Iris species should be propagated in this way, as colour variations of much interest and sometimes of increased beauty may occur.

PEGGING DAHLIAS.—Perhaps the pegging of Dahlias is very unusual, but I have found it for a long series of years for decorative effect. The shoots need to be pegged down only once, and strong and long pegs are needed to hold them in position. Four shoots are usually ample to form the foundation of a bushy plant, but crowded medium habited varieties are better. Stakes or other means of support are needed. Old plants, as opposed to those produced from seeds or cuttings in spring, are best, but the latter may be managed in this way.

DEUTZIAS.—The pruning of Deutzias is effected by thinning out the older flowering shoots in order to make room for young ones. There is a class, of which D. *scabra* is a type, which produces long, straggling shoots, and once a plant has become rather thick the best method is to cut back a few of the strongest growths, as these will break from below the cut and produce strong, flowering growths to fill the place of those removed. Deutzias, like Roses, do best in highly manured soil, and need to be regularly surface dressed with manure to enable them to flourish.

COMMON SHRUBS.—Long shoots of the coarse-growing common Laurel may be cut well back to ensure that amount of trimness which may not be sacrificed in well-kept gardens. A shrubbery may be quickly overgrown, but pruning can be done at any time when other more important work cannot be performed. Weigela shoots that have flowered should be cut out to allow the young ones to take their place to flower another year.

THE APIARY.

By CHLORIS.

USE OF HONEY. In these days of sugar shortage it may be helpful to many bee-keepers to know how to put honey to the best advantage. In the very earliest days it was the only sweetening matter, and was recognised as a most valuable article of food. It is undoubtedly very nourishing, decidedly wholesome, and is considered to be conducive to good health; in fact, early writers always referred to honey as one of the necessaries of life. Honey contains one of the most important foods, sugar in a most wholesome and easily digestible form. Further, honey has great medicinal properties; by its constant use constipation is easily banished, and, unlike cane sugar, honey does not tend to cause teeth to decay. Only in one instance have I known honey to cause any unpleasant results, and in this instance a person had swellings, as if stung, in several parts of the body, particularly about the face, caused, no doubt, by the formic acid added by the bees to each cell before sealing it to prevent the honey from fermenting. In cases of rheumatism, chronic dyspepsia, and climatic troubles much benefit is said to be derived from its continued use. Honey may be used with great advantage for sweetening wherever sugar has been consumed. Used in tea, coffee and cocoa, it adds a peculiar aroma which cannot be attained by the use of sugar. I fear that those who get accustomed to it in these days will never want to use sugar again. It may be used with great advantage for sweetening cakes, and those made by its addition will keep moist longer than when sugar is utilised. A delicious sandwich in these days of meat shortage may be made as follows: Cut thin bread, butter or margarine lightly, cover with honey, sprinkle with oatmeal which has been boiled in the oven till just brown, press on another thin slice, and cut into fingers. Honey can be kept almost any length of time if it be stored in a warm, dry place, and kept quite air tight. Should it granulate or candy it may be restored to its liquid state by placing the honey jar in warm—not boiling—water, until quite liquid. When boiling water is used the delicate flavour of the honey evaporates. As a valuable food for the aged, and young children, honey has few equals certainly no superiors.

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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.*

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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.*

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Letters for Publication, *as well as specimens of plants for naming, should be addressed to the* **EDITORS 41, Wellington Street, Covent Garden, London**. *Communications should be* WRITTEN ON ONE SIDE ONLY OF THE PAPER, *sent as early in the week as possible, and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.*

APPOINTMENTS FOR THE ENSUING WEEK.

TUESDAY, JULY 23—
Southampton Royal Hort. Soc. show and Southern Counties Carnation Soc. Ann. Ex. at Southampton (2 days).

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 62.9.

ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, *Thursday*, July 18, 10 a.m.: Bar. 27.9; temp. 69°. Weather—Cloudy.

Agricultural Reconstruction.

The Sub-Committee of the Reconstruction Committee, presided over by Lord Selborne, K.G., P.C., has now issued its report* on the methods of increasing home-grown food supplies in the interests of national security. It will be remembered that the first part of the Report of the Sub-Committee, recommending the breaking up of considerable areas of grass land, formed the basis of the Corn Production Act, and has resulted in the remarkable increase of arable land which the Food Production Department has recently been able to record—an increase which undoubtedly ranks among the great achievements of the war, and reflects great credit both on the Department and on the farming community.

The second part of the report insists on the need for agricultural instruction and research, and advocates—as we think, wisely—the placing of the responsibility for agricultural instruction and research on the Board of Agriculture and public funds, and not on the County Councils, as heretofore.

The report advocates a large provision for small holdings, and takes the view that holdings should be of either owned or tenanted type. Here, again, most people will endorse heartily the conclusion reached by the Sub-Committee, and will be glad to see that, in the opinion of its members, provision should be made for ownership as well as for tenancy.

It would be too much to expect that, with the large problems confronting the Sub-Committee, much attention should have been given specifically to horticulture as distinct from agriculture. But, now that the State has recognised the importance of the horticultural industry, it is to be hoped that this omission will be made good, for surely on all grounds future intensive production is no less worthy of careful consideration than is extensive cultivation. Looked at as the means of food production, as a means of employment, or as a source of wealth, there is evidently a brilliant future before those countries which can develop intensive—that is, horticultural—cultivation scientifically. The pre-war imports of fruit and vegetables were vast, and much of this imported produce might have been raised at home. In view of the importance which the Admiralty attaches to the rôle of the submarine in future wars, it is evident that the State that wishes to survive the attack of the Hun of the future must be in a position not only to defend, but also to fend for itself—in other words, it must be on as large a measure as possible a "self-supplier." Experience has shown that even from the point of view of cost the cheap imports of pre-war times become the ruinously expensive things in war-time—witness the imported Onions of last year. But, needless to say, the cost of the import is secondary to the risk of not getting it, and the food shortage of six months ago ought not to be lightly forgotten, nor the moral which it points lost.

The report deserves full and careful study, for it points the way for a real agricultural reconstruction, and if its principal recommendations are adopted, there should be no need for young and ambitious men to leave this country in order to find a scope for their energies and abilities; they would become home colonists.

* Stationery Office, Cd. 9079.

Forestry and the Problem of Afforestation.

Those who have lately been alarmed at the extent of the tree-felling operations which have been carried out in this country during the war will have been somewhat reassured by the appointment of a Government Committee consisting of Lord Curzon and Mr. G. N. Barnes to look into the whole problem of forestry and re-afforestation in this country. Some idea of the extent of the felling which has been done during the past few years may be gathered from the fact that whereas before the war we imported 90 per cent. of our timber, we shall have imported this year only 500,000 tons, the production in this country having reached the colossal amount of three million tons. This production would not have been possible but for the aid of large numbers of Canadian lumbermen. There are now 100 companies working in England and France, the total number of men engaged in the two countries being nearly 30,000.

Naturally, the production of so vast an amount of timber involves the destruction of a very large number of forests; and the problem of how to replace these forests for the benefit of future generations becomes more and more pressing. In countries where forestry has been understood and practised for years, there is a regular system of afforestation, which consists in the compulsory formation of fresh plantations in place of the timber felled, which provides automatically for the maintenance of the original extent of the woodland. Unfortunately, in this country we have had no such system, except on a few private estates owned by conspicuously enlightened landlords. We trust that the appointment of a committee to go into this matter will result in a constructive programme which will preserve the forests in this country from the fate which overtook so many in mediaeval times.

Nurseries should at once be established in proximity to the areas which are to be planted; thousands of acres of the barren heathlands in Norfolk and Surrey could be brought under arboriculture with the expenditure of very little time and trouble. But the bulk of the suitable land is in Scotland, and most of the money to be expended will probably be sent to that country. It will be regrettable if, as has been suggested, two separate bodies be set up, one for Scotland and one for England; such a scheme would lead to unnecessary overlapping, and probably to delay in administration. Schemes for plantings should be dealt with by a central authority, and should be put in hand as soon as they are ready, whether in one country or in the other. We trust that whatever form the Central Board may take, it will consist of members carefully chosen for their knowledge of forestry and their administrative capacity, and that, above all, the work of afforestation will be begun without further unnecessary delay.

AGRICULTURAL WAGES BOARD AND MINIMUM RATES OF PAY.—Among the misapprehensions which are prevalent, perhaps none is more widespread than the idea that the decisions of the Agricultural Wages Board render illegal the continuance of those old-standing customs under which an employer provides part of his men's remuneration in kind: a cottage free of rent, a supply of milk or Potatos, everything, in a word, that is grouped under the expressive term "allowances," except intoxicants. So far as the Wages Board is concerned, these customs are just as legal as they were before it came into existence. The new fact is that some of these supplies, but not all of them, will count as "wages" towards the minimum rates now being fixed, and the Wages Board has to decide which shall count, and how they shall be reckoned. Decisions on these points cannot be taken in a hurry, for old customs need careful handling, and it is not possible at present to say precisely what may be reckoned as "wages," or how the value is to be ascertained. It has, however, been already decided that an employer may reckon the value of milk and Potatos supplied to his men, and estimate it at the local wholesale prices. Any payment in cash, such as beer-money or cider-money may be counted as part of wages, but if beer or cider are given they must be regarded as additions to the minimum wage. The idea that the farmer must not supply what he may not count indicates a failure to grasp the significance of the word minimum. The Wages Board does not fix wages, but minimum rates.

SYRINGA SWEGINZOWII.—The Lilac illustrated in fig. 11 was originally named Syringa Sweginzowii by KOEHNE and LINGELSHEIM in 1910 the material having been obtained from a private arboretum near Riga. The native country of the plant was not known at the time, but a Lilac almost identical with it had previously been found by Mr. E. H. WILSON in Western China in 1904. There it is said to inhabit ravines at elevations of upwards of 17,000 feet. It must consequently be a very hardy shrub. The plant is described as growing 10 feet or more high, the young shoots being purplish. The leaves are ovate or oval, 2 to 4 inches long and half as wide, dark green, and smooth above, paler green beneath, with hairs on the midrib and veins. The flowers are in panicles up to 10 inches long, fragrant, and open in June. The tube of the corolla is about one-third [illegible] the outside [illegible] Siberian Syringa [illegible] orders, and we [illegible] Lilac [illegible] about [illegible] Burkwood [illegible] Sweginzowii [illegible] Mr. Wilson, Gibbs [illegible] Turner [illegible] named [illegible] Mr. Turner [illegible] The species [illegible] Botanic Garden.

THEFT OF ASPARAGUS TOPS AT EPSOM.—On the night of [illegible] Asparagus beds [illegible] Headley Court [illegible] thieves, thus practically [illegible] Asparagus growth [illegible] frequently sold as Asparagus Fern, but buyers should be satisfied [illegible] otherwise private [illegible] to suffer from the depredations [illegible] take considerable risks at [illegible] tain something for nothing. [illegible] gardener says that if Asparagus [illegible] greatly. "Crowns" cannot be produced and therefore valuable food will be lost in the coming years; this fact [illegible] magistrates when Asparagus thieves are being dealt with.

POST-WAR USE OF GOVERNMENT STORES IN AGRICULTURE AND HORTICULTURE.—A large amount of Government [illegible] will be available for industrial purposes at the conclusion of the war, but unless [illegible] hand, proper distribution will be [illegible] We, therefore, welcome the appointment by the Committee [illegible] Agriculture to consider how such stores may best be utilised in the interests of [illegible] and horticulture, and what method of purchase and distribution should be adopted. The Committee is composed of Earl GREY, Dr. F. KEEBLE, Mr. W. R. HOPKINSON, Mr. DOUGLAS NEWTON, Capt. Sir BEVILLE STANIER, Bt., Major the Hon. E. F. WOOD, Mr. J. W. B. PEASE, Mr. H. STEPHENSON, and Mr. N. WALKER, with Mr. E. G. HAYCRAFT BROWN, 3, Whitehall Place, London, S.W. 1, as Secretary.

UTILITARIAN RABBIT KEEPING.—Rabbit keepers are invited to join the National Utility Rabbit Association, which has for its object the rapid increase of rabbits especially suitable for food. By increasing the supply of rabbits the Association hopes to create subsidiary industries from by-products, such as fur. Lord LAM BOURNE, president of the Association, who assumes this invitation, [illegible] rabbit clubs, rabbit keepers' societies, and similar bodies, should become affiliated to the Association as its province is to act as a centre for the distribution of information, the supply of good stock and registration of pedigree. If funds permit, the Association will undertake experimental work and arrange to give demonstrations. The Food Production Department has agreed to make a grant of £500 towards initial expenses provided the Association receives sufficient support from voluntary subscriptions. Before the war between 2,000 and 3,000 tons of rabbits were imported annually as food, and it is desirable that the country should in future become self-supporting in this connection. Particulars of the Association may be obtained from the Secretary, 124, Victoria Street, Westminster.

MR. J. K. RAMSBOTTOM.—We [illegible] that Mr. J. K. RAMSBOTTOM has accepted an important appointment with Mr. GEO. MONRO, Jun., of Covent Garden, whose large interests [illegible] for the Government. From 80 to 85 per cent. of the Rhubarb produced in Yorkshire will be sent to the jam makers.

YORKSHIRE RHUBARB FOR JAM-MAKING.—A Yorkshire correspondent informs us that the Rhubarb growers of Leeds are just now almost [illegible] as they will be on Peace Day, they [illegible] experienced difficulty in getting their [illegible] to distant markets, hence a third of the [illegible] formerly devoted to the growing of Rhubarb was last autumn added to the area of [illegible] and other farm produce. Now, however, [illegible] of all soft fruit is far below the [illegible] Rhubarb growing has been officially declared to be a work of national importance, and [illegible] has already taken over, at a cost [illegible] between 4,000 and 5,000 tons [illegible] of the season's crop which has [illegible] on a large scale in the open. At [illegible] the picking of Rhubarb and [illegible] is being done

FIG. 11.—SYRINGA SWEGINZOWII: PETALS WHITE, TUBE LILAC ROSE.

[illegible] cultivation at Spalding, and [illegible] Mr. RAMSBOTTOM will conduct [illegible] those directors to which Tulips and Dutch [illegible] Iris bulbs, and will devote [illegible] by experiments to [illegible] cover [illegible] and cultural [illegible] Mr. RAMSBOTTOM has had about two years' experience in the study of Daffodil disease at the Royal Horticultural Society's Garden, Wisley, and our readers will remember that he read a paper on this subject before the Horticultural Club on May 8, 1917. The appointment is interesting as showing the progressive spirit that is abroad in commercial horticulture; at the same time it is a pleasure to state that Mr. RAMSBOTTOM'S investigations with regard to eel worm in Daffodils will continue, and the results will be published in the course of the Royal Horticultural Society.

PUBLICATIONS RECEIVED. *Forestry Work.* By W. H. Whellens. (London: T. Fisher Unwin, Ltd.) Price 8s. 6d. net.—*Willing's Press Guide, 1918.* (London: James Willing, Ltd.) Price 1s.—*Small-holder's Cheese, Skim-milk Cheese, Cottage Cheese.* By Renwick H. Leitch, West of Scotland Agricultural College, Bulletin No. 87. (Glasgow: Robert Anderson.)—*Notes on American Trees. 1. Quercus.* By Prof. C. S. Sargent. Reprinted for private circulation only from the *Botanical Gazette*, Vol. LXV., No. 5, May, 1918.—*Annual Report of the Botanic Gorden Syndicate, Cambridge.*—*The Life and Letters of Sir Joseph Dalton Hooker, O.M., G.C.S.I.* By Leonard Huxley. (London: John Murray.) Price 36s.

HOME CORRESPONDENCE.

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

AMERICAN BLIGHT.—*Market Grower*, on p. 15, asks for a remedy for this insect. I have used the following specific for many years, and proved it to be effectual. Take 4 ozs. of soft-soap and dissolve in 1 gallon of hot water; when thoroughly mixed add 1 oz. of carbolic acid and stir it well into the solution. Apply the specific to all infested places with a stiff paint brush, working it well into crevices. The workman should be careful not to get the mixture on his skin, also to stir it occasionally if the carbolic acid floats to the surface. *W. H. Divers. F.M.H., Westdean, Hook, near Surbiton.*

—— Here this irrepressible pest, as with *Market Grower*, has been unusually troublesome this season. Even two-year-old trees have been attacked. The trees have been sprayed with a 2-ounce-to-the-gallon solution of Gishurst's Compound, which, in the meantime, has proved effectual. Two operators were engaged in spraying, one of whom did his work so efficiently that only dead aphides were to be found on the conclusion of his labour. The other's operations were of no use whatever, the insects being as evident as ever when he had finished. Spraying, to be a success, requires a man with brains as well as hands to operate, and it is vain to explain and illustrate in the case of the mentally incapable. American Blight has well-marked proclivities, colonising on a few varieties of Apples to the exclusion of others. Dumelow's Seedling (Wellington), Ribston Pippin Grange's Pearmain, King of the Pippins, and Blenheim Pippin are the sorts it seems to prefer here, many other kinds, even this season, being immune from attack. *R. P. Brotherston.*

VEGETABLES (see p. 13).—In respect to Mr. Beckett's remarks on various vegetables, I may say that in a long experience I have found sulphate of ammonia and superphosphate of lime the two best "artificials" for vegetables. The former I always employ with a niggardly hand, and instead of scattering it broadcast, apply it rather close to the stem of the vegetable, one application being sufficient. Some crops may have more than one application of superphosphate, Onions, for instance, but where soot and poultry manure are available it is much better to substitute these for repeated dressings of the other. Onions have been completely destroyed in some of the small gardens in this locality. I have lost a considerable number of plants, probably 2,000 out of 10,000 planted, which is quite an exceptional occurrence. I prefer Leeks to Onions, and of those many thousands are looking well. The late Potatos are the best of the Potato crops here. Early varieties are growing in what for some time has been no better than "dust," and the tubers, consequently, are small. Deep-planted Potatos will be much the best crop this year. Early planting, though some folk say it is bad gardening, is also helpful, and no Potatos could look better than those planted early in March and much deeper than usual. Cauliflowers and Cabbages in this district have suffered to a terrible extent from root-maggot. Even Cauliflowers ready to "flower" have been attacked by the pest, and whole plantings have been destroyed. Nevertheless we have, so far, had an abundant supply of Cauliflowers since early in June, with the promise of plenty for another month or six weeks, after which there will be less to fear for the crop. Beet is a complete failure. *R. P. Brotherston*

THE CAUSE OF THE APPLE FAILURE (see p. 5).—I consider that the failure of the Apple crop is due to persistent cold winds at the time of flowering rather than to the drying of the flowers. I much doubt whether any amount of sunshine would have had such an effect on the flowers as your correspondent suggests, although it might, in conjunction with cold, northerly, drying winds. The cold weather kept bees and other insects at home when the flowers were ready for pollinating. So far as my own trees (Dumelow's Seedling and Lord Suffield) are concerned, I am sure the reason I have suggested is the correct one, for not a bee was to be seen when the trees flowered, and yet they did not crop well last year. *C. N.*

SOCIETIES.

ROYAL HORTICULTURAL.

JULY 16.—Although there was nothing of outstanding merit among novelties at this meeting, there was a good exhibition of general subjects, including a capital display of Carnations. These flowers were shown in classes provided by the National Carnation and Picotee Society, which held its annual competitive exhibition in conjunction with the R.H.S. meeting. The attendance was better than at any meeting hitherto held this year. An exhibit of vegetables, staged by Messrs. BARR AND SONS, was of outstanding merit, and was awarded a Gold Medal.

The Clay Cup, offered for the most fragrant Rose, was not awarded, although Mr. HICKS staged Mrs. Elisha Hicks. Mr WALTER EASLEY sent the fragrant Dr. Grew, and Rev. J. H. PEMBERTON entered Pax for this award.

At the 3 o'clock meeting of Fellows a lecture entitled "Battle-Scarred Wastes" (illustrated by lantern views) was delivered by the Rev. Albert Lee, B.Sc., F.R.G.S.

Floral Committee.

Present: Messrs. H. B. May (in the Chair), John Green, G. Reuthe, John Heal, Sydney Morris, J. W. Moorman, Chas. Dixon, E. F. Hazelden, W. P. Thomson, John Dickson, Chas. E. Pearson, W. G. Baker, R. C. Notcutt, W. J. Bean, J. F. McLeod, W. Howe, J. T. Bennett Poë, George Paul, E. H. Jenkins, R. W. Wallace, H. Cowley, and W. B. Cranfield.

AWARDS OF MERIT.

Campanula Enchantress.—A dainty little hybrid Campanula, obtained by crossing the hybrid C. Norman Grove with C. Waldsteimiana. The growth is tufted, and flowering plants are about 6 or 8 inches high; the growth is very slender, but fairly erect, and forms a pyramid, carrying a host of small, semi-pendent flowers, that are a pretty lavender-blue shade. The plant is quite hardy, and should gain popularity alike for the rock garden and the cold greenhouse. Shown by Messrs. THOS. B. GROVE AND SONS.

Yucca Ellacombei.—A handsome form, producing stately spikes 4 feet tall, laden with pendulous flowers, borne on numerous side branches. The colour is cream white. In general appearance the spike of flowers are like those of Y. gloriosa, but the straight, deep green, sharply pointed leaves carry a suggestion of Y. filamentosa. It appears, from Mr George Paul, that the original plant was found in a bed of seedlings at Loddiges' Nursery, long years ago, and was taken by Canon Ellacombe to his garden at Bitton, where its freedom and distinction made it known to hardy plant lovers as Yucca Ellacombei. Shown by Messrs. PAUL AND SON.

Gaultheria trichophylla.—This is a very low-growing, small-leaved species, of tufted habit, and remarkable for the large size of its Wedgwood-blue berries. Grown in the shade it becomes a handsome plant, but grown in the sun it does not look quite so happy, although it fruits with freedom. Shown by Mr REUTHE.

OTHER INTERESTING PLANTS.

Several interesting Campanulas were shown by Messrs. J. B. GROVE AND SONS, and the one named C. Marion Grove attracted attention by reason of the regular deep blue shading on its pale blue flowers. Messrs PAUL AND SON had Liriodendron tulipifera aureus, which has its leafage almost wholly golden, and therefore very effective. A very long-leaved form of the plant popularly known in gardens as Ficus radicans variegata was shown by Mr. L. B. RUSSELL. Lobelia Erinus compacta Opal, from Messrs. HURST AND SON, should prove a popular bedding form in happier times.

The new, large single Rose named Mermaid, soft yellow, with golden stamens and anthers, shown by Messrs. WM. PAUL AND SON, was admired by everyone; it is a hybrid from Rosa bracteata. Another striking Rose was Elizabeth Cullin, in Messrs. ALEX. DICKSON AND SONS' group; this variety has crimson-scarlet flowers, and is very fragrant. Interesting hardy shrubs shown by Mr. G. REUTHE included Desfontainea spinosa and Abelia floribunda.

GROUPS.

The following medals were awarded for collections:—*Silver-gilt Banksian* to Mr L. R. RUSSELL, for stove plants and seedling Dracaenas. *Silver Flora* to Messrs. H. B. MAY AND SONS, for Ferns and greenhouse flowering plants; to Rev. J. H. PEMBERTON, for Roses; to Mr. G. W. MILLER, for hardy flowers. *Silver Banksian* to Mr. G. REUTHE, for hardy shrubs and Alpines; to Messrs. WM. PAUL AND SONS, for Roses; to Messrs. B. R. CANT AND SONS, for Roses. *Bronze Flora* to Messrs. G. AND W. H. BURCH, for Roses. *Bronze Banksian* to Messrs. J. CHEAL AND SONS, for "Star" Dahlias.

Orchid Committee.

Present: Sir Jeremiah Colman, Bart (in the Chair), Sir Harry J. Veitch, Messrs. Jas. O'Brien (hon. secretary), R. Brooman White, J. Wilson Potter, Walter Cobb, W. H. White, Arthur Dye, W. Bolton, R. A. Rolfe, W. H. Hatcher, J. Charlesworth, J. E. Shill, Chas. H. Curtis, T. Armstrong, Fred. Sander, Pantia Ralli, Frederick J. Hanbury, and C. J. Lucas.

AWARDS OF MERIT.

Odontoglossum Queen Alexandra var. de Barri (Harryanum × triumphans Lionel Crawshay), from DE BARRI CRAWSHAY, Esq., Rosefield, Sevenoaks. The fifth of a very remarkable batch to secure awards, and second only to the large and handsome O. Queen Alexandra Memoria Lionel Crawshay, which was awarded a First-class Certificate last year. The new variety bore a strong spike of many large flowers with broad, yellow sepals, and petals heavily blotched with red-brown. The ample, almost circular labellum is pure white in front, with bright violet blotch and markings in front of the prominent yellow crest.

PRELIMINARY COMMENDATION.

Odontioda Cheribon (Oda. Vuylstekeae × Odm. Mars), from Messrs. ARMSTRONG AND BROWN, Orchidhurst, Tunbridge Wells. A distinct new hybrid, with well-formed flowers of large size and fine substance. The sepals and petals are glowing ruby-red, with a gold shade and a few slight white markings in the middle of the segments and on the margin. The broad lip is blotched with dark red at the base, the front white freckled with rose.

GROUPS.

Messrs. STUART LOW AND CO., Jarvisbrook, Sussex, were awarded a Silver-gilt Flora Medal for an extensive group of Cattleyas, Laelio-Cattleyas, Odontoglossums, and Odontiodas. Forms of Laelio-Cattleya Aphrodite and L.-C. Vesuvius and white Cattleyas were conspicuous, and there were many species, including the blue Dendrobium Victoria Regina, Cattleya Rex, and Bulbophyllum barbigerum.

Messrs. ARMSTRONG AND BROWN, Orchidhurst, Tunbridge Wells, were awarded a Silver Flora Medal for a well-arranged group of specially fine hybrid Odontoglossums, Odontiodas, and Laelio-Cattleyas, among the last-named being L.-C. Kavala (C. Elvina × L.-C. Epicasta), a compact dwarf plant, with large, rose-coloured flowers, with rich purple lip. Some good forms of Cattleya Warscewiczii, including a white-petalled variety, were well displayed.

Messrs. CHARLESWORTH AND CO., Haywards Heath, were awarded a Silver Flora Medal for a group in which their hybrid Miltonias, including forms of M. Charlesworthii and M. Isabel Sander, were very attractive. Forms of the pretty white-petalled Cattleya Hesta, some handsome Odontoglossums, and the pretty rose-pink Brasso-Cattleya Virgo (B. cucullata × C. Mossiae), were included in the group.

H. T. PITT, Esq., Rosslyn, Stamford Hill (gr. Mr Thurgood), showed two specimens of the elegant Dendrochilum filiforme, with about fifty slender sprays of small, yellow flowers on each, and Odontoglossum Prince John, a finely-blotched hybrid.

Messrs. FLORY AND BLACK, Orchid Nursery, Slough, showed Sophro-Laelio-Cattleya Vesuvius (S.-L.-C. Marathon × L.-C. Nella), a pretty new hybrid with yellowish-cream sepals, and petals tinged and veined with rose, and bright ruby-red lip.

Mr. J. E. SHILL, The Dell Gardens, Englefield Green, showed a good spike of a fine form of Cattleya Dupreana (Warneri × Warscewiczii).

Fruit and Vegetable Committee.

Present: Messrs. Joseph Cheal (in the chair), W. Bates, Edwin Beckett, H. Markham, E. A. Bunyard, J. C. Allgrove, and E. Harriss.

The group of splendidly grown vegetables so admirably staged by Messrs. Barr and Sons thoroughly merited the Gold Medal awarded. The group was an extensive one, and contained numerous varieties of the several kinds available at this season of the year in a large garden where there are conveniences and labour for the early production of high-class vegetables: the Marrows, Beet, Peas and Cauliflowers were very fine, and a dish of Exhibition Red Potatoes added a good colouring to a notable display.

Messrs. W. S. Seabrook and Sons showed an Apple named Mr. Prothero, a good keeper, and with a brightly-coloured base. Mr. Close showed large-fruited clusters of Red Currants named Laxtonian Red, an abundant cropper, but apparently not readily discriminated from well-known varieties.

NATIONAL CARNATION AND PICOTEE.

July 16.—In very many respects the Carnation exhibition held in the Drill Hall, Westminster, in connection with the R.H.S. meeting on Tuesday last, was a good one. The flowers were of good average size and colour, though a considerable number were just below their best condition.

The Cartwright Challenge Cup offered to the exhibitor making the best display in the open classes was won by Mr. James Douglas, who also secured the Martin Smith Memorial Challenge Cup by obtaining the highest aggregate number of points in the first division of the schedule. The two gold medals offered for the highest aggregate number of points obtained in the second and third divisions of the amateur section were won by Mr. J. J. Keen, Southampton (Hon. Sec.), and Mr. C. S. Webb, Thornton Heath, respectively.

New Varieties.

The Society's Certificate was awarded to each of the three following border varieties, all of which were shown by Mr. James Douglas:—

Purity.—A broad, flat-petalled, pure white self variety, of fine substance and good form.

Mrs. S. G. Murray.—A white-ground fancy variety, with heavy markings of rich, deep violet-purple colour.

J. J. Keen. A heavy-edged white ground Picotee, rather small, but with very broad, rounded petals; the heavy edging is deep maroon-scarlet.

Open Classes.

In the first half-dozen classes six varieties were required, three blooms of each, staged in vases, with Carnation foliage. For bizarres and flakes Mr. James Douglas and Messrs. A. R. Brown, Ltd., were placed 1st and 2nd respectively, and occupied similar positions for white-ground Picotees, selfs, fancies, and yellow-ground Picotees. The six fancies shown by Mr. Jas. Douglas, i.e., Lt. Shackleton, Mona Skirmisher, Lord Steyne, Linkman, and Queen Eleanor, were very handsome specimens.

Some of the best flowers in the show were to be found in the series of colour classes provided for six blooms of one variety, staged in one vase. Mr. Jas. Douglas won the 1st prize for a buff or terra-cotta variety with Elizabeth Shiffner; for a heliotrope variety with The Grey Douglas; and for a yellow-ground Picotee with Eclipse (very fine); and for a white self with Albion. Mr. Lakeman was 1st for a rose or pink self with Hilda Bick; for a maroon or crimson self with Mrs. G. Marshall; for a yellow self with fine specimens of Border Yellow; for a fancy variety with the gorgeous Paquita; and for a white ground Picotee with Montrose. Miss Shiffner led for a red or scarlet self, with Jean Douglas.

Messrs. A. R. Brown, Ltd., had the best twelve show flowers, staged on cards; their blooms of Dick Swiveller (rose flake) and Master Fred (bizarre) were adjudged premier blooms. The same firm gained the 1st prize for a dozen Picotees shown on stands.

Amateurs' Classes.

In the amateurs' section Mr. J. J. Keen, Southampton, excelled in the class for flakes and bizarres, three varieties, three blooms of each, in vases. Merton and Fred were adjudged premier blooms; 2nd, Mr. Jas. Fairlie. Mr. Keen beat Mr. Frostick, Norbury, in the class for Picotees.

The 1st prize for three selfs, three blooms of each, was awarded to Mr. Robert Morton, Woodside Park, who had charming boxes of Purity, Firemist, and Peach Blossom; 2nd Mr. Shiffner, Lewes. Mr. Morton was also successful in the class for three fancies, staging Linkman, Lt. Shackleton, and Pasquin in the form; 2nd, Mr. Frostick. Mr. Morton was also the 1st prize winner in the class for three Picotees. Miss Shiffner led for red, and a good Picotee.

In the third division amateurs, the leading prize winners were Mr. S. C. Webb, Thornton Heath, and Mr. S. McKinstry, Fulham.

NATIONAL ROSE.

Concluded from p. 19.

Nurserymen's Classes.

The premier position, with Champion Trophy as the principal class for nurserymen was won by Messrs. B. R. Cant and Sons; the seventy two blooms were not large, but bright in colour; a few of the finer specimens were George Dickson, Margaret Dickson, Avoca, Souv. de Henry Graham, Mrs. Sam Ross, Lieut. Chaure, Naarden, Mrs. Wemyss Quin, Mrs. George Shawyer, Mildred Grant, and the bloom of Muriel Dickson which attracted the attention of Queen Alexandra; 2nd, Messrs. D. Prior, 3rd, Messrs. F. Cant and Co. For forty eight blooms the honours fell in order of mention to Messrs. G. and W. H. Burch, Messrs. Hugh Dickson, Ltd., and Mr. Elisha J. Hicks. For twenty four blooms Mr. Henry Drew and Messrs. Jarman and Co. were placed 1st and 2nd respectively.

The H'Obrain Cup for eighteen Teas or Noisettes was won by Mr. G. Prince, who was closely followed by Messrs. D. Prior and Sons and Mr. Henry Drew. Messrs. B. R. Cant and Sons led for a dozen blooms of Roses distributed since January 1, 1914, and they showed Mrs. Bertram J. Walker and W. G. Gaunt, 2nd Mr. Elisha J. Hicks.

The Turner Cup offered for the best three dozen bunches of decorative Roses was won by Messrs. Frank Cant and Co., who staged Rouge Angevine, Mme. Colette Martinet, and Rosa Mundi in fine form; 2nd Messrs. Alex. Dickson and Sons. Mr. Geo. Lilley, Messrs. G. and W. H. Burch, and Mr. Elisha J. Hicks were placed as named for twelve bunches of decorative Roses. The best display of Polyantha Roses was staged by Mr. Henry Drew.

Messrs. D. Prior and Sons won 1st prize for three baskets of cut Roses, followed by Mr. Elisha J. Hicks, while in the larger class for seven baskets of blooms Messrs. Alex. Dickson and Sons won 1st prize with "K. of K." and other handsome varieties; 2nd Messrs. Hugh Dickson, Ltd.

Messrs. Paul and Son were awarded 1st prize for a fine group of Roses; tall standards of Lady Gay towered gracefully above large sprays of garden varieties and bowls of specimen flowers.

Mr. Elisha J. Hicks led in the class for a large group of cut Roses and his gorgeous display had as the ground of tall pillars of Rush Rambler, Scarlet, and American Pillar, with great sheaves of Jeanna Bridge, Queen of the Belgians, Florence Forrester, Princess Mary, Chas. E. Shea, and Mrs. George Shawyer in the foreground. Messrs. B. R. Cant and Sons 2nd. For a smaller group the Rev. J. H. Pemberton was placed 1st.

Amateurs' Classes.

The amateur champion for the year is H. L. Wetten, Esq., Oxted, who led among four competitors with large, full, bright and clear blooms of H. R. Clarke, Souv. de Pierre Notting, Lyon Rose, Mme. Léon Pain, Molly Sharman Crawford, Mildred Grant (Silver Medal H.T.), Bessie Brown, Candeur Lyonnaise, Mme. Jules Gravereaux, and the old Mrs. John Laing; Dr. C. Lamplough was a good 2nd, C. C. Williamson, Esq., Canterbury, was 1st, followed by G. Speight, Esq., in the open amateurs' class for two dozen blooms.

The Rev. F. R. Burnside, Great Stanbridge Rectory, won the Elisha J. Hicks Challenge Cup for two dozen blooms, [illegible] exhibit; 2nd, S. W. Burgess, Esq. [illegible].

The amateurs' trophy for Tea and Noisette section was won by Mrs. Bevir, Fortescue, Dropmore, Maidenhead, [illegible] bloom at Mrs. Foley Hobbs being [illegible] vase lovely flowers, and fine specimens of cream of its section; Beauty and Souv. de Pierre Notting were also very good. Rev. F. R. Burnside 2nd, and Dr. C. [illegible], Kirkstall, Alverstoke, 3rd. Capt. Lennox Kitcat, Wimbold Lodge, Newbury, led [illegible] the nine blooms; T. S. Hayes, Esq., D. Prior 2nd, and S. W. Burgess, Esq., 3rd. W. J. Pangbridge, Petersfield, led for [illegible] Noisettes.

The [illegible] in arrangement of Roses, W. H. [illegible], Esq., Withenridge, Beaconsfield, was [illegible] prize.

The [illegible] blooms in other amateurs' classes [illegible] H. J. Matthews, Esq., Stevenage; F. A. Manley, Esq., Northwood; J. Stronell, Esq., Hemel Hempstead; H. L. Wetten, Esq., Oxted; A. R. Reeves, Esq., Gosport; Arthur Johnson, Esq., Bishop's Stortford; P. de Escofet, Esq., Dulwich; W. A. Shipley, Esq., East Dulwich; J. W. Roff, Esq., West Green; Mrs. Bevir, Fortescue, Maidenhead; M. H. Ward, Esq., Epsom; Capt. Kitbee Stuart, Newbury; R. de V. Pryor, Esq., Hitchin; H. B. Darlington, Esq., Potters Bar; H. Courtney Page, Esq., Enfield; and F. R. Roberts, Esq., Dorking.

TRADE NOTES.

SUGGESTED INSTITUTE OF AGRICULTURAL BOTANY.

At an important meeting of the Agricultural Seed Trade Association, held at the Cannon Street Hotel on the 15th inst., Mr. Lawrence Weaver, C.B.E. (Director of Supplies, Food Production Department), gave an interesting address on the aims and objects of the new National Institute of Agricultural Botany which it is proposed to establish at Cambridge. He said they stood at the threshold of a new era in agriculture, because the labourer was now certain of a living wage, and the farmer was approximately certain that he would get an adequate price for his produce for many years to come. Early in October, 1917, the late Mr. Leighton, of Newcastle, Staffordshire, suggested to him that the Food Production Department should institute some sort of control over the selling of seeds, in the interests of the honourable seedsman who was subject to a good deal of unfair competition. England alone of the great nations did not possess an official seed-testing station, but after securing the assent of the Board of Agriculture the seed-testing station was established by Mr. Prothero. An institute on the lines of the Scalof Institute in Sweden was desired, but the question arose as to how it could be financed. Everyone agreed that the work ought to be done and many people thought the Treasury should pay for it, but he felt that an Institute which the agricultural interests had helped to endow would carry far greater weight than one purely official. Moreover, an Institute provided by the monetary assistance of the trade could reasonably ask the Government that it should be consulted in regard to the details of any future scheme of seed control. His first step was to approach Sir Robert Mc Alpine, who with characteristic generosity promised £5,000 down and £1,000 for five years. The Hon. Rupert Guinness, who was an enthusiastic supporter of agricultural research work, gave £1,000, and several friends in the seed trade gave £1,000 each. The National Association of British and Irish Millers had decided to raise the sum of £5,000, and the National Association of Corn and Agricultural Merchants were raising a subscription. He had drafted a trust deed on broad national lines, under which members of the various Associations in the trade would be nominated to the Council of the Institute would be balanced in such a way as to link between the official Government agricultural, the seed trade, and the farmer, and he believed it would be a potent instrument in the great national policy of food production at home

Upon the motion of the President, seconded by Mr. E. Sherwood, the following resolution was unanimously adopted:

"That this meeting of the Agricultural Seed Trade Association of Great Britain and Ireland, having heard Mr. Lawrence Weaver's address on the scope and functions of the proposed National Institute of Agricultural Botany, cordially welcomes its establishment in the interests of British agriculture and of the seed trade, expresses its gratitude to those who have initiated the trust fund with generous benefactions, and invites the members of the trade to subscribe with such liberality that the Institute may be assured of a prosperous career."

Subsequently the Chairman announced donations amounting to ten thousand guineas, and a vote of thanks to Mr. Weaver brought the proceedings to a close.

PROPOSED CHAMBER OF HORTICULTURE.

A PROPOSAL to form a Chamber of Horticulture was adopted at a meeting of the Horticultural Trade held at Dunnington House, Norfolk Street, Strand, on the 17th inst. In all probability this meeting will have a far reaching effect on commercial horticulture, as the formation of a central body to which may be focussed all the weight and interests of the trade will have great influence. The general idea, as set forth by Mr. H. Morgan Veitch and Mr. Geo. Monro, junr., is the federation of all horticultural trade bodies, the formation of a Chamber by means of delegates, and the election of a Council by the delegates. Mr. Morgan Veitch pointed out that at present it was not the special business of any particular person or society to watch the interests of the trade; each society did what it could, but the whole weight of numbers and influence was not brought to bear upon matters of vital importance to the trade. It would be the duty of a Chamber of Horticulture to watch for and fight against irritating and unfair Orders and other measures, and to promote constructive legislation. Moreover, it was pointed out that the position of Horticulture in the commercial world would be greatly improved by means of a central Chamber to which Government Departments could apply for information when legislative measures were being considered.

A quiet and earnest enthusiasm characterised the proceedings, and a sum of £700 was promised, in a few moments, towards the initial expenses. The type of society to be admitted, draft rules, finance, office, and other matters were referred to a committee for consideration and report. This committee, with Mr. H. Morgan Veitch as hon. sec., includes Messrs. Geo. Monro, junr., Alfred Watkins, W. Pomfart, H. G. Lobjoit, R. Wallace, Joseph Rochford, H. O. Larsen, — Evans, and C. H. Curtis. Its duties are merely preparatory.

THE TESTING OF SEEDS ORDER.

ALTHOUGH particulars now have to be given in respect of packets of seeds, sold or exposed for sale the new Order makes one concession as regards small packets. This concession is to the effect that in the case of packets of Pea or Bean seed not exceeding 2 lbs., or of garden Turnip, garden Cabbage, garden Kale, garden Kohl Rabi, Brussel's Sprouts, Broccoli, Cauliflower, Carrot, Parsnip, Beet, or Onion not exceeding 4 ozs., where the germination of the seed sold or exposed for sale is at or above the standard specified in Part IV. of the First Schedule to the Order it shall not be necessary to give the particulars required by the Order. Furthermore, even if the germination is below that standard, it shall be sufficient to state that fact.

Apparently, therefore, the actual figures need not be given in respect of the above small quantities of the particular seeds mentioned.

FRUIT-PICKING IN SCOTLAND.

As in former years, strong efforts are being made to induce school teachers and others to spend part of their holidays in picking fruit, especially for the Blairgowrie district. In order to promote this movement a meeting was held in the Good Hall, Edinburgh, on the 3rd inst. Dr. Mercer presided, and impressed upon those present the advisability of assisting. Mr. J. Hodge, Blairgowrie, stated that every pound of fruit should be gathered. The complaint had often been made that the grower was profiteering at the expense of the picker, yet in some years at least, such as 1915 and 1916, the growers had lost money. Last year they did not make more than 15 per cent., which made an average of about 5 per cent. over three years.

CROPS AND STOCK ON THE HOME FARM.

SPRAYING POTATOS.

THOSE who believe in the advantage of spraying and season and late Potatos will have already sprayed their plants once at least. The long continued spell of dry weather was all against the spread of late blight, but the late weather has at last broken, and those who have not already sprayed their pots would do well to do so without delay. Even if spraying does not prevent an attack of blight, as some aver, it is almost universally admitted that spraying does prolong the growth of the haulm by at least three weeks. If this be true the weight of the crop must be increased considerably, and will compensate for any diseased tubers there may be.

The Food Production Department recommends the use of Burgundy mixture, especially where freshly burnt stone lime is not available for the making of Bordeaux mixture.

Burgundy mixture is made as follows:—

Dissolve 4 lbs. of sulphate of copper (98 per cent. purity) in 5 gallons of water, then make up to 35 gallons. Dissolve 5 lbs. of washing soda in another vessel in 5 gallons of water; warm water may be used to expedite the dissolving of the soda, and when this has been done the soda should be added to the copper sulphate, stirring vigorously meanwhile. If a piece of red litmus paper dipped into the mixture remains red, add more soda, and keep the mixture stirred until the litmus paper just turns blue.

The fungicide should be used in a fresh state, and in no case should it be applied more than ten hours after it has been made.

In spraying thoroughly wet the leaves with the liquid, especially on the under surfaces. The manner in which the specific is applied is of more importance than using a large quantity; just a fine spray is sufficient. For small plots a knapsack sprayer answers well. Where acres are to be sprayed a horse-drawn sprayer is essential.

SWEDES.

Seedling Swedes of the first-sown batch of seed are growing satisfactorily, notwithstanding an attack of Turnip fly when the plants were coming through the surface; the recent showers have accelerated their growth. Directly the plants are large enough to handle they should be "set out," or thinned; much depends on this detail for their future success. I know of no plant that so quickly shows the advantage of early thinning as the Swede. When allowed to remain crowded in the rows the plants are "stunted" in growth and never produce fine roots.

If the weather is dry horse-hoe between the rows and draw wide-open tooth harrows across the rows. This aids not only the hoers when thinning the plants, but hastens growth by disturbing the soil about the plants.

If the seed was good, and sown at the rate of 2 lbs. per acre, there need be no fear of the harrows killing up many of the plants. *E. Molyneux.*

Obituary.

HARRY J. WHITE.—We regret to record the death of Mr. Harry J. White, nurseryman, Worcester. On Tuesday, the 9th inst., he was on a business journey riding a bicycle on the tow-path of the canal, near Worcester, when something went wrong with the machine and he was thrown into the water. His clothing became entangled in the bicycle, and, failing to extricate himself, he was drowned before help could reach him. He was hon. secretary of the Worcester Auxiliary of the Royal Gardeners' Benevolent Institution. Mr. White was 42 years of age, and leaves a wife and one daughter.

MRS. A. KNIGHTS.—The many friends of the late Mr. Peter Barr, V.M.H., of King Street, Covent Garden, W.C., will regret to learn of the death of his second daughter, Mrs. Alice Knights, of Ridgebourne, Christchurch Road, Streatham, S.W., who passed away at the residence of her sister, Mrs. Dunlop-Barr, at Timperley, Cheshire, on the 15th inst.

ANSWERS TO CORRESPONDENTS.

DWINDLED CHINA ROSES: *E. L.* Roses cannot possibly succeed when planted in close proximity to fruit or timber trees, as the roots of these latter will appropriate the moisture and nourishment provided for the Roses. Choose a better site, or, if that is not possible, cut back the roots of the trees and place a piece of sheet-iron in the soil to prevent them from encroaching in the future. If the soil is light add some heavy turfy loam and decayed manure in the autumn and transplant the Roses therein.

GRAPES DISEASED: *K. C. H.* The berries are affected with spot disease (Gloeosporium ampelophagum). Dust the berries and leaves with flowers of sulphur, and again after a interval of 10 days, adding a small quantity of quicklime to the sulphur. See reply to *H. G.* in the last issue.

FREE TRAINING IN GARDENING FOR GIRLS: *W. M. G.* So far as we are aware there is no horticultural school where a girl may obtain free training in gardening. Women students are taken at Swanley Horticultural College; Studley Royal, Glynde, and at University College, Reading; fees, living expenses, and syllabus of training may be obtained on application to the principal in each case. The Education Department of your own County Council may be able to give you further information, as courses of horticultural training for women are now being given in many places.

NAMES OF PLANTS: *J. B. M.* 1, Sedum album; 2, Veronica Traversii; *J. S. Unsworth.* 1, Lupinus commutus (Nipplewort); 2, Epilobium montanum; 3, Brassica nigra (Black Mustard); 4, Euphorbia Lathyris (Caper Spurge); 5, Allium Moly. This latter is the only garden plant; the rest are weeds. *Kent.* Scrophularia arachnoidea (Oldwell Horsleckl), S. Webbiana, Hort. ex C. B. Lehm. and Schnitt sp., and S. tomentosum, C. B. Lehm. and Schnitt sp., are both synonyms of S. arachnoidea. *J. O. Campden.* 1, Lilium elegans; 2, L. Martagon album; 3, Crassula coccinea; 4, Clematis Lady Bovill; 5, Ranunculus asiaticus flore pleno; 6, Pyrethrum Parthenium flore pleno; 7, Lychnis Chalcedonica.

PEAS UNHEALTHY: *T. L.* There is no sign of any parasitic disease in this Pea haulm. The yellowing of the foliage is most probably due to the unfavourable season.

PRIVATE GARDENERS AND WAR SERVICE: *W. T. W.* Place your case before the War Agricultural Executive Committee without delay; present a clear statement of the amount of ground you are cultivating for food production, the amount and kind of help you receive, and the number of people you supply with vegetable food and fruit. Enclose a doctor's certificate of your health, and give particulars of the Tribunal's decision as to grade and temporary exemption. At the same time send a complete copy of your statement to the Food Production Department, 72, Victoria Street, Westminster.

TOMATOS DISEASED: *H. S.* The disease on the Tomato leaves is "rust," caused by the fungus Cladosporium fulvum. Spray the plants regularly with Bordeaux mixture. Remove with a damp cloth any sediment from the wash which is on the ripe fruit before it is used.

Communications Received.—W. A. C.—J. A. P.—S. X.—A. B. W.—R. W. T.—A. R.—A. D.—D. J. H.—J. H. W.—A. W. G.—A. N.—P. A.—A. A. W. & Son.—A. B. C.—H. D.

THE
Gardeners' Chronicle
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ILLUSTRATIONS.

ON INCREASED FOOD PRODUCTION.

FLAGEOLET AND HARICOT BEANS.

IN these times it is of importance to obtain as much food value out of vegetables as possible, but of the possibly available pulses we do not get as much as we should. In the form of the ripe dry or "Haricot" Bean we use the full value, but, generally speaking, the "Bean" served at table (excepting the Broad Bean) has comparatively little nutritive value. Inasmuch as the real food is contained in the seed, the value of the Bean will depend upon the extent to which the seed has developed at the time of consumption. Many of the kinds grown in this country become uneatable before the seeds have developed more than a small fraction of their growth, owing to the development of hard membrane in the pod. In the true "Mangetout" varieties this parchment-like membrane is absent and the pods are still tender throughout, even when the seeds are nearly fully developed, though the pod must not be left to shrink in its final maturation. The hard podded sorts can, however, be utilised to the full by consuming them as "Flageolets"—that is to say, they are shelled, like Peas or Broad Beans, before cooking; in this form they have a high value in protein, or "flesh forming" constituents, and are able to take the place of meat, but they have only a small fat percentage, so preferably the use of fat of some sort with these Beans is advisable, unless they are consumed with, say, fat bacon. Though so little known and used in this country, the Flageolet is an important article of diet abroad; the visitor to the daily vegetable market in any small French town will see numbers of market women busily occupied in shelling Beans as they wait for customers. Besides being served simply alone or compounded into succotash with green corn (Maize), or, again, flavoured with Tomato, the "Flageolet" may be passed through a sieve after cooking and used for soup, Bean pudding, or croquettes. Inasmuch as the constituents are still in the unripened condition, they may well be in a more digestible condition than are the dried ripe "Haricots." The perfect Bean to grow is one which not only is of good flavour when cooked as green pods, but which also yields good Flageolets and also good ripe Beans; at the same time the plant must be a prolific cropper. My rule is never to pull up a Bean plant until it has yielded at any rate Flageolets, if not ripened Beans as well. After picking off all green pods, those pods which are judged to be too old are allowed to remain for Flageolets; and of these, again, those that are too far ripened to make good Flageolets are allowed to mature for final harvesting. When cold weather sets in, picking is guided by the probability of eventual ripening. Thus practically every pod is utilised. Last winter I used to pass two long rows of Scarlet Runners crowded with ripened pods which were probably wasted; had they been White Runners they could no doubt have been marketed if the grower was unable to use them in his household. Last season, from a 10-yard row of four white varieties of Runner Beans, we eventually harvested several pounds of ripe seed, after picking green pods and Flageolets. It must be some ten years that I have worked on these lines, and even in the worst summers I have not failed to get a sufficient supply of ripe Beans. In a bad summer later sowings, especially of second early and late varieties, may fail to ripen, but even then many Flageolets may be obtained, which may be bottled or canned if not consumed at once. The varieties which I grow are the Predome dwarf, of which *Les Plantes potagères* states it is the most perfect of the Mangetout Beans in freedom from membrane and string; it may be eaten when the seeds are about full size. The other of the Mangetout class is one I obtained many years ago and which is [illegible] improved "Dutch Brown" Bean, [illegible] as I am somewhat inclined to believe, a dwarf form of St. Fiacre. [illegible] the seed [illegible] ripe Bean is [illegible] and rounded, of a pale [illegible] *in hat* [illegible] it also affords a fair sized Flageolet. Possibly there may be seeds for distribution this season. Of dwarfs particularly for Flageolets and ripening I grow Haricot Flageolet vert [illegible] Besides [illegible] likewise green seeded Chevrier, which is reputed to have rather a liability to mildew, but which so far has behaved itself well in this respect. Flageolet rouge, a red-brown seeded sort, yields a fine, large, juicy Flageolet, but unless picked rather young has not the fine green colour of the two former varieties. All [illegible] heavy croppers if red spider is not allowed to infest the plants. Of Runner kinds I grow only white seeded varieties; Sutton's Abundance we leave mostly to ripen; Sutton's Mammoth White and Chelsea Giant White make fine creamy Flageolets and are good as Haricots, but both need to be picked [illegible] for green pods, as the hard membrane develops early. Another white-seeded Runner which makes enormous pods, was sent me by Mr. Heine [illegible] many years ago as the Soya Bean, which it certainly is not; this season, I hope, will show whether it may not be identical with Dai Fuku, seeds of which have been given me. On the trial patch we have also two other Beans of Japanese origin, and a few of the much talked-of Brown Dutch, which from appearance was almost condemned without trial.

This spring I have been giving an object lesson to neighbours on the French saying that when sown, "the Bean should see the gardener as he leaves the patch." Of white-seeded sorts some were sown in a greenhouse bed without covering at all, others were covered with soil. Those of the uncovered ones whose [illegible] was not turned upwards rapidly sent down rootlets, and the cotyledons rapidly became green, showing that nourishment was being formed there, and with the result that when the buried seed showed above earth these others had become about a foot high. In the open the seeds cannot be left quite uncovered, but as little soil as may be necessary to hide them, and no more, seems advisable.

With regard to Runner Beans, I stretch a piece of coarse-meshed wire netting 3 feet wide about 3 feet above the ground to serve as support, and in order to lead up the shoots a few short twigs are thrust into the ground; usually the support is moved year after year to another site. The two end supporting posts are strutted, and the wire stretched by means of a couple of raidisseurs and lengths of wire. All Beans are easily within reach without a pair of steps, which must be needed as some people grow them. Runner Beans are often grown as a field crop, and an Evesham correspondent informs me that the plan is to space the plants a yard apart, pinch out the tips when 6 inches high, and continue to nip off half an inch from the side-shoots as they appear; further, Peas treated in the same way become "stocky" and self-supporting without any sticks or poles. As a trial I am making a compromise with a few plants, [illegible] that straggling too near the ground the seeds may not ripen. Having a number of sticks about 4 feet long these Beans will be allowed that amount of support and be pinched accordingly; in this way it is hoped to get the crop to [illegible] the disadvantages of tall sticks. It [illegible] natural to turn to the trials of the Royal Horticultural Society for information [illegible] and Runner Beans at Wisley" (*R.H.S. Journ.*, XXXV., Pt. III., 1910, p. 476), but unfortunately these afford no help. Merely a list of names and awards is given, no indications whatever as to quality, development of membrane, identity, or close relationship of the various sorts appear. There is likewise no attempt at classification or reason given for the awarded certificates. A variety which bears a very heavy crop which becomes membranous early may be in reality inferior to one which gives a rather lighter crop but which remains good for picking green Beans over a longer period. The list gives one no idea as to what are good as Flageolets or would be profitably grown on to ripen and afford Haricot Beans for storage. *H. F. D*[illegible]

LATE TURNIPS.

In the spring and early summer it is a difficult matter to obtain a supply of early Turnips in sufficient quantities for requirements, and again in autumn it is not always easy to maintain the requisite supply. Measures should now be taken to ensure a plentiful crop of this vegetable through the autumn, and a little later seeds must be sown to provide supplies until frame Turnips are available in spring.

One of the chief difficulties in raising Turnips at this season is damage from attacks of the Turnip beetle or flea. Much can be done to help the young plants against this pest. In dry weather open the drills in the ordinary way, and before sowing the seeds flood them with water. This will ensure rapid germination, and if the seedlings are copiously watered once or twice as they appear there will be less probability of the insect doing serious harm, as the pest does not love moisture.

The soil should be in such a condition that the plants may make rapid progress after germination. Endeavour to get them quickly into the rough leaf and the danger from the beetle will be materially lessened. To ensure this, quickly stimulating manures may be used. Dustings of soot are excellent, both before sowing and after the plants are through the ground. Wood ashes are helpful when applied in a dry state, and may be not only dug into the ground, but are excellent for dusting over the seedlings.

Soil that has been heavily manured for a previous crop is the most suitable for Turnips; if the land is naturally poor, stable manure may be necessary, and superphosphate at the rate of 4 to 5 ounces to the square yard. I have found Turnips succeed well in ground that is not freshly dug provided the surface has been thoroughly hoed and raked after the previous crop has been removed. In the case of land which had been under generous treatment for several years, a dressing of superphosphate and wood ash applied to the soil and [illegible] previous to opening the drills has been followed by good crops without further preparation.

It may be possible to secure roots sufficiently large for use by sowing after the first week in August, but seasons vary so much that one can never be sure. There is a temptation to sow at that late time, as usually much ground falls vacant just about the end of August or beginning of September, but the practice seldom pays. Therefore it is advisable that the seeds should be sown not later than the first week in August.

In regard to varieties, as a hardy winter sort I doubt if the old Chirk Castle is to be surpassed for quality and hardiness combined. Roots of the old Green-top variety will keep a long time in good condition, but this sort is not so hardy as Chirk Castle. There are one or two strains of yellow-fleshed Turnips which withstand frost well, and are worth growing for winter use. Much can be done to maintain a supply through October by lifting and storing roots in November.—*James A. Pearce.*

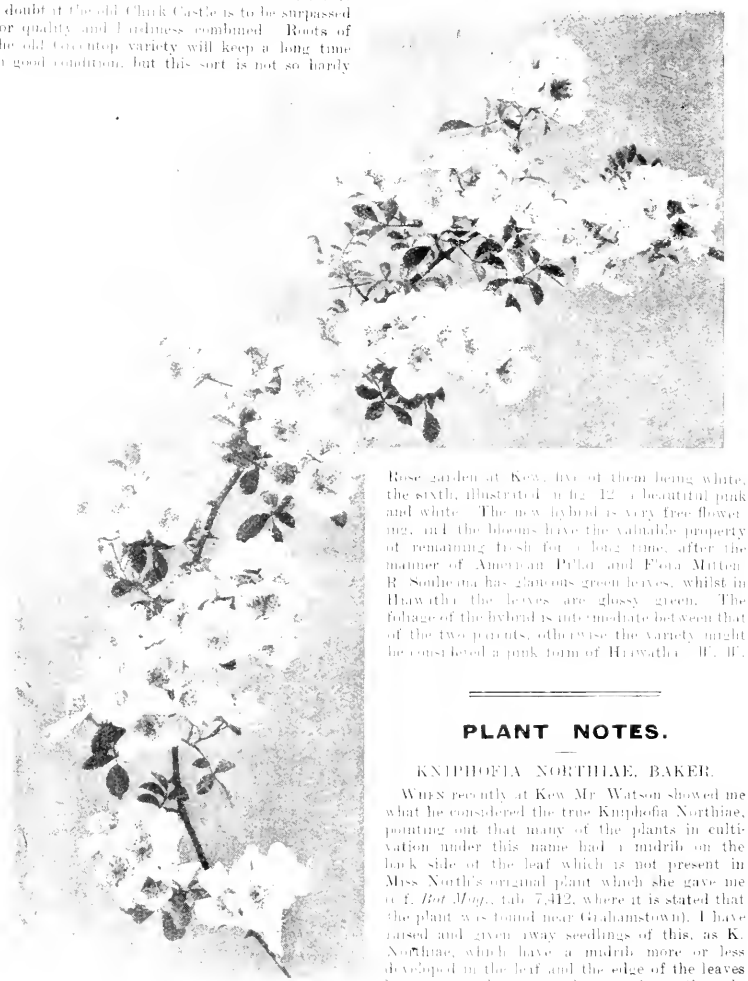
BEETROOT

Beetroot can still be sown, to add to the supply for winter. The soil should be rather rich, and a Turnip-rooted variety selected. Guard against sparrows as the seedlings push through the soil. Thinning must not be delayed. Spray the foliage after a hot day.—*C. Davis, Holy Wells Park Gardens, Ipswich.*

THE ROSARY.

ROSE KEW RAMBLER

Six years ago Rosa Soulieana, a white-flowered climbing species from China, was crossed at Kew with the red-flowered Hiawatha, a Wichuraiana hybrid, and one of the best of the red ramblers. Six plants of the cross are now in flower in the Rose garden at Kew, five of them being white, the sixth, illustrated in fig. 12, a beautiful pink and white. The new hybrid is very free flowering, and the blooms have the valuable property of remaining fresh for a long time, after the manner of American Pillar and Flora Mitten. R. Soulieana has glaucous green leaves, whilst in Hiawatha the leaves are glossy green. The foliage of the hybrid is intermediate between that of the two parents, otherwise the variety might be considered a pink form of Hiawatha.—*W. W.*



(Photograph by E. J. Watts.

FIG. 12.—ROSE KEW RAMBLER: FLOWERS PINK AND WHITE.

PLANT NOTES.

KNIPHOFIA NORTHIAE, BAKER.

When recently at Kew Mr. Watson showed me what he considered the true Kniphofia Northiae, pointing out that many of the plants in cultivation under this name had a midrib on the back side of the leaf which is not present in Miss North's original plant which she gave me (cf. *Bot. Mag.*, tab. 7,412, where it is stated that the plant was found near Grahamstown). I have raised and given away seedlings of this, as K. Northiae, which have a midrib more or less developed in the leaf and the edge of the leaves less serrate, the former character being the only one by which Baker separated Northiae from caulescens Baker, *Bot. Mag.*, tab. 5,946. This was collected by Cooper for Mr. Wilson Saunders on the Stormbergen between Albany and British Caffraria. I have the plant which Mr. Wilson Saunders gave me forty years ago, and as it is now in flower I have compared it with Northiae and with K. Tuckii, Baker, *Bot. Mag.*, tab. 7,644, which came from Colesberg. Though the habit and foliage of these three plants are distinct, and for horticultural purposes K. Northiae is as superior to K. caulescens as that is to K. Tuckii, yet the inflorescence of all three is so similar, that I am certain that no botanist taking broad views of species could separate these three plants on their floral characters alone; and unless their leaf characters remain constant when raised from seed, which does not seem to be the case with Northiae, one must suppose that they represent local forms due to environment. We find precisely similar instances in the genus Agapanthus and in Crinum, which in different parts of South Africa vary much in size and habit, but though their flowers and leaves differ so much in size and colour that gardeners and the older school of botanists treat them as distinct species, the differences are insufficient to distinguish many of the so-called species. I cannot agree with Mr. Baker's remark in *Bot. Mag.* that K. caulescens will never replace the gorgeous K. Uvaria as a border plant, even if it is hardy, which at that time he thought very doubtful. Anyone who saw it as I have it on the top of a rock in my garden would say that it is one of the handsomest of the genus; and the fact that it has survived temperatures below zero here without protection proves its hardiness. Baker also speaks of its "trunk"; this implies to me a woody trunk, which is not strictly correct, for though its habit is more caulescent than that of Northiae, and not herbaceous like that of Tuckii, yet the stem is never woody, and the offsets, if not taken off and planted deeply, lie on the ground and eventually decay. Though the three illustrations referred to, all by Fitch, are good ones, yet my plants do not show the same amount of difference in the bracts below the flowers that his drawings do. K. caulescens and K. Northiae both attain about 4 feet in height, and flower here a month or more before any of the forms of K. Uvaria type, which now vary so infinitely that they must, I think, be looked on as florists' flowers. I may state that in the case of the only one which I have raised for two generations, namely, K. Nelsonii, the progeny of the second generation have trebled in size and lost all resemblance to their original parent. Though this may be due to hybridisation, yet it shows how inconstant the genus is, and how much it needs revision on broader lines than Mr. Baker followed.—*H. J. Elwes, Colesbourne.*

ORCHID NOTES AND GLEANINGS.

CATTLEYA WARSCEWICZII BRITAIN'S QUEEN.

Mr. J. Howes, gardener to Samuel Gratrix, Esq., West Point, Whalley Range, Manchester, sends a flower of a very delicately tinted, nearly white form of C. Warscewiczii, of which he states: "The plant is flowering for the first time, although imported some years ago. It was described by the collector as having 'white sepals and petals and pink lip,' and although it is not a true albino I consider it very distinct."

The flower sent is 8 inches across and of good shape, the silver-white sepals and petals having the slightest trace of Peach blossom tint: the lip is a pale lavender or Peach-blossom colour with a very slight purplish-rose line in the middle of the front lobe, the disc of which is chrome-yellow.

The novelty is a very pretty form and nearest to C. Warscewiczii Mrs. E. Ashworth, illustrated in *Gard. Chron.*, September 4, 1897, p. 163.

TOP-GRAFTING RESULTS.

The top-grafting of trees of undesirable varieties of Apples, which was done under very favourable conditions in April, has answered well this year. The very small percentage of failures can generally be traced to caterpillars eating out the bursting buds. One caterpillar is quite capable of devouring all the buds on a grafted tree if left undisturbed. It has been necessary to examine the trees several times to prevent this destruction. A scion will stand a good deal of ill-treatment once it has formed a junction with the stock, growth being so vigorous. In many

cases where a bud has been eaten out another has pushed at its side.

The worst variety to top-graft, in my experience, is Gascoyne's Scarlet, a thoroughly undesirable Apple for my district, owing to its tendency to canker. A number of trees grafted three years ago have proved an almost total failure. The scions made an excellent start, but soon died off, the bark of the headed stocks bursting away from the wood and turning brown and dry. I have seen this trouble, described as "flooding out," attributed to excess of sap, and the suggestion made that, when heading down rank-growing trees for top-grafting, one branch should be left intact for a season to take some of the sap. This hint was followed when top-grafting some more Gascoyne's Scarlet trees this season, and apparently it succeeded—at any rate, there has been no "flooding out" this time. The only drawback is that insect pests from the old branch may find their way on to the new growth, as caterpillars have done this year.

The common plan of rind or crown grafting never seems quite satisfactory to me, since it does not bring into union the cambium layers of stock and scion—said to be the essential point in all systems of grafting. I have generally adopted the modified plan of lifting the bark on one side only of the cut made on the stock, and taking a thin slice off one side of the scion in order to bring into contact the two edges of the bark. The result is a perfect junction all down that side. The only trouble is that the scion is rather apt to blow out if exposed to strong winds after it has made some growth. This year a new plan has been tried, though quite likely it is not original. The usual vertical cut having been made through the bark of the stock, two more short cuts are made at the top, one on each side of the first. These extend only about ½ inch down from the top of the stock. At the base of them, a short horizontal cut is made, and the two little pieces of bark bounded by these three cuts removed entirely. This leaves the usual long vertical cut with a narrow patch of bark removed at the top exposing the wood. This patch should be the same width as the scion, which is prepared with a single splice cut in the ordinary manner, and then a thin slice is taken off each edge. When the scion is pushed down under the bark in the ordinary way the cambium layers of stock and scion come in contact on both sides at the top, and there is no space down between the bark and the wood of the former. At the same time the lower end of the scion is held firmly under the bark of the stock. Several grafts done in this fashion have been uncovered. In every case a neat junction has resulted, and the scions seem to be firmly clasped, though it remains to be seen how they will stand the test of wind.—*Market Grower.*

CULTIVATION OF CYCLAMENS.

(Concluded from p. 21.)

In five weeks from the time of sowing, two or three-year-old seed will commence to germinate, and when this is observed the paper should be removed and the glass tilted with a small stone or wooden label, until the seedlings push their way through the soil, when the glass may be removed. The seedlings will make good progress during the next three weeks, until the seedling heat is about one inch long, after that stage they will begin to lag, but at this stage the tiny corm is forming its first true leaf, and every encouragement should be given the plants to grow freely by stirring the surface soil carefully with a sharp pointed stick, and spraying them overhead twice each day in bright, warm weather. There are few plants that do not love the sunlight, but the Cyclamen is an exception. The observant grower will find that Cyclamens will develop more growth in one dull week than in three weeks of warm weather and sunshine, therefore it is important to have the houses or frames in which the plants are grown properly shaded. Blinds are certainly the best form of shading, but where these are not available, Summer Cloud answers the purpose very well. When the seedlings show signs of being eaten by pests, a sharp look-out should be made daily for a little, green-coloured caterpillar about ½ inch long, difficult to find, and very troublesome in some districts. The only method of eradicating this pest is to hand pick at night: in the morning the caterpillars are hidden in the soil, but very often return to their work of destruction in the afternoon. Dusting soot on the ashes or gravel on which the pans stand is a good preventive against the attacks of slugs. By the middle of September the lights of the frames should be closed, as the air is much cooler, and during the daytime very little air should be admitted, but the amount of ventilation must depend on the out-door temperatures, as no hard and fast rules can be laid down beyond stating the necessity to prevent draughts and fluctuations of temperature. Towards the end of September the seedpans should be placed in the greenhouse, where they should receive every attention. The ideal temperature for Cyclamens at all times is 55°, but the plants may be grown successfully in temperatures ranging upwards from 45°. By the end of October seedlings from the July sowing should be ready to prick out, but this operation should not be proceeded with until the seedlings have made two or three leaves. Where large numbers of plants are grown 40 seedlings are generally pricked off into 5-inch pots (B's). The best system is to place three seedlings around the side of a 5-inch pot; plants grown in 3-inch pots are less liable to receive a check when being divided for their first potting. The compost for pricking off should be similar to that recommended for sowing the seedlings; a slight dusting of soot may be added with advantage, but not more than a 3-inch potful to each bushel of soil. Subsequent cultural details consist chiefly in keeping the plants clean. Should thrips make its appearance, fumigation will be necessary. Keep the plants at all times in a light, airy position near the glass; do not overcrowd them. No shading will be required after the end of September. Apply water liberally, and spray the plants overhead on fine afternoons. I would repeat the advice to prevent fluctuations of temperature; rather grow the plants in a temperature of 45° than 60°, but remember the ideal temperature for Cyclamens is 55°. Plants thus treated will make fine specimens, ready for their first potting singly by the end of January.—*J. W. Forsyth.*

TREES AND SHRUBS.

ÆSCULUS PARVIFLORA

This member of the Horse Chestnut family, often known as Pavia macrostachya, is a native of the south-eastern United States, from whence it was introduced to cultivation in 1785. Its usual season of blooming is the latter part of July and in August, when few shrubs are in flower. There is no other occupant of our gardens with which it may be confounded, as it forms a shrub from 6 to 10 feet in height or even more, and spreads by means of sucker-like basal growths, but it covers a considerable space. The divided leaves usually consist of five leaflets, which are dark green above and clothed with greyish down beneath. The flowers are borne in erect panicles, in some cases almost a foot in length. The showiest portion of the inflorescence is the cluster of long, thread-like, pinkish white stamens, which stand out prominently. What is not particular is to call Æsculus parviflora flowers best in a fairly deep moist loam that is not parched up during the summer.—*W. T.*

FIG. 15.—ÆSCULUS PARVIFLORA, A DWARF, LATE-FLOWERING CHESTNUT.

DEUTZIA HYPOGLAUCA

Deutzia hypoglauca was not injured by the severe cold experienced in America during the past winter, and has now flowered for three years in the Arnold Arboretum. It is a tall, vigorous shrub, with erect, much-branched stems, lanceolate, long-pointed leaves, dark yellow-green on the upper surface and pale below, and light, orange-brown branchlets. The pure white flowers are seven-eighths of an inch in diameter, and are borne on slender, drooping pedicels in many-flowered compound, round-topped clusters from 3 to 4 inches across. The broad, petal-like filaments, which are rather shorter than the spreading petals, and are notched at the apex, form a tube rising from the centre of the flower from which the bright yellow anthers emerge.

D. hypoglauca was discovered by Mr. E. H. Wilson in Hupeh, but the plants in the Arnold Arboretum were raised from seeds collected in 1910 by Mr. Purdom on the mountains of Shensi, at altitudes between eight and ten thousand feet above the sea-level. This may prove a valuable plant to cross with some of the Chinese Deutzias with rose-coloured flowers. It is a handsomer plant than D. parviflora,

another Chinese species, and an old inhabitant of the Arnold Arboretum, where it has proved to be one of the hardiest of all Deutzias. Sent from the Arboretum to M. Lemoine, at Nancy, France, it was successfully crossed by him with D. gracilis. The result of this cross was Deutzia Lemoinei, one of the handsomest and hardiest garden shrubs of recent creation. One of the forms of D. Lemoinei, Boule de Neige, has been unusually plentiful this season.

PRIMULA SPICATA.

THIS graceful little plant belongs to the Soldanelloides group of the genus, which includes the better-known Himalayan species P. Reidii, P. uniflora, and P. Wattii, as well as the Chinese P. nutans. The species was introduced into cultivation by Messrs. Bees, Ltd., through their collector, Mr. G. Forrest, who found it on the eastern bank of the Tali range in Western Yunnan in 1906. In his notes with the dried specimens Mr. Forrest remarks: "This graceful little plant grows on dry, rocky slopes and on ledges of cliffs in side valleys in sunny situations at an elevation of 11,000 feet." The softly hairy leaves are produced in rosettes, from which spring the flower stems, 4 inches to 8 inches high. The bright blue, fragrant flowers, sprinkled with silver meal and with a white interior, are produced in spikes of from 6 to 9 flowers each. This spicate character is a distinct feature, separating the plant from all other members of this genus.

Like many other Primulas, P. spicata is of a short or biennial character, setting its seeds rapidly after flowering, and the blooms withering off immediately. Fresh seeds germinate freely, and the plant may be grown in places where P. nutans succeeds, that is, a well-drained, partially shaded position, but it does not like too much hot sunshine.

P. spicata obtained the R.H.S. Award of Merit when shown by Messrs. R. Wallace and Co. at the meeting of the Royal Horticultural Society on May 7, 1918. W. J.

FIG. 14.—PRIMULA SPICATA: FLOWERS BRIGHT BLUE.

The Week's Work.

THE KITCHEN GARDEN.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

COLEWORTS.—Make another sowing of Coleworts during the present week, to obtain plants for transplanting when the second early Potatos are lifted in August. Plants of this sowing will produce heads of good size by the end of the autumn. Plant out those sown earlier as opportunity occurs, for all vacant spaces should be cropped this year.

CELERY.—Celery may still be planted out, choosing a white variety for early supplies and the red or pink sorts for late use. This crop needs a rich soil and an abundance of moisture, but it is not advisable to plant in over-rich ground or to use water to excess, or the heads will grow coarse and fail to blanch well. Single rows find most favour with growers, and the plan of allowing the plants to become nearly full grown before earthing them up is fairly general.

LEEKS.—Leeks may still be planted in deep holes made in well-enriched soil with an iron bar. Leeks are a most useful vegetable in spring, when the stocks of Onions are exhausted.

SHALLOTS, GARLIC, AND ONIONS.—Where these bulbous vegetables have ripened their foliage the plants should be pulled up and spread on mats to ripen thoroughly before storing them.

WINTER GREENS.—The work of planting all kinds of green crops has made rapid progress since the rains fell. Cabbages which were sown thinly late in April and May have made sturdy plants, and should be put out as the early crops of other vegetables are cleared. Late plantations of Autumn Giant Cauliflowers and Veitch's Self-protecting Broccoli should be made; when the weather remains mild until near Christmas these late plantations are most useful. Purple Sprouting Broccoli should be extensively grown; the plant is very useful, as it fills a gap when the tender white sorts are over. Scotch Kale, Savoys, and other greens should be put out directly ground is available. They may be planted very late in the season, and it is seldom that late-planted or half-grown crops are injured by frost.

THE HARDY FRUIT GARDEN.

By JAS. HUDSON, Head Gardener at Gunnersbury House, Acton, W.

FIG TREES ON OPEN WALLS.—The fruits upon Fig trees against open walls in favourable localities should now be nearing the ripening stage. When at this stage of development do not water too liberally, but, on the other hand, do not allow the roots to become excessively dry; aim at a happy medium. Remove any weak or superfluous growths and do not allow the foliage to shade the fruits, which should be allowed to ripen fully on the trees if for use at home, but if for packing to travel by rail or road pick them carefully a day or two earlier. Encourage young trees to grow freely by watering and syringing them, as red spider may otherwise attack the leaves. If any shoots have developed too vigorously nip out the point.

LOAM FOR FRUIT TREE BORDERS.—Good loam is equally as essential for the preparation of hardy fruit borders as for vine borders, and now is a suitable time to procure a supply. In these unusual times many have allowed their stocks of loam to get unduly low, but it is a mistake to have so little in hand as to run the risk of having finally to use soil of indifferent quality. I much prefer turfy, yellow loam that is so full of fibre as to hold together, and it should be of a calcareous character. If the turf is obtained soon there will be time to make it into a stack that will be fit for use by the end of September. If there is a deficiency of lime in the turf mix bone-meal with it as it is stacked. Should the loam be of too retentive a character add finely broken old lime rubble and small particles of brick. In some large establishments it is a comparatively easy matter to find good loam on the estate, but it is not always easy for the gardener to get the necessary permission to use it. A small amount of well-rotted farmyard or stable manure, well broken down, should be added to the compost used as top-dressings for fruit borders. If the soil needs draining, broken clinkers from the stokehole provide suitable material for the purpose. Where the loam is on hand mix the compost forthwith.

STRAWBERRIES.—Runners that were layered a month ago are ready for severing from the parent plants. Between this period and the time for planting it will be better to keep the runners plunged in their small pots until the ground for planting is at liberty. Let the plants be carefully attended to for watering. Prepare the ground as suggested, a little in advance of the actual planting, and when the weather is favourable tread it lightly. Take an early opportunity of examining the permanent Strawberry beds; remove all runners and weeds, and lightly hoe the soil between the plants. If any particular variety has made too much foliage a few of the leaves may be removed. Should the soil seem exhausted a dressing of well-rotted manure will be beneficial; this material should be lightly forked below the surface. Failing stable manure, I am using Peruvian guano as a top dressing.

ALPINE AND PERPETUAL STRAWBERRIES.—Alpine Strawberries have rarely been more satisfactory as an early crop than during the past six weeks. The flower-spikes in beds that are intended for cropping in the early autumn have all been removed for the last time, and the trusses will now be allowed to develop. Meanwhile we have plenty of fruits on the early batch, and these will maintain the supply. The young stock intended for planting out in the autumn will need attention; remove adventitious spikes and early runners. Our plants are growing in an old frame, so that they can be easily attended to. The plants of Perpetual-fruiting Strawberries should soon be mulched, and runners, unless showing their first spikes, removed. Let the trusses, when long enough, be lightly supported in order to keep the berries well off the soil. As soon as the first berries begin to colour place nets over the plants to prevent birds eating the fruits.

FRUITS UNDER GLASS.

By W. J. GUISE Gardener to MRS. DEMPSTER, Keele Hall, Newcastle, Staffordshire.

TOMATOS.—There is still time to sow Tomato seeds to produce plants for winter fruiting, although I doubt the advisability of growing this crop in view of the shortage of fuel. Plants raised from seeds sown last month should be transferred to 5-inch pots directly they are fit to handle, and placed on a shelf near the roof-glass to encourage sturdy growth; shift them into larger pots as they require more root-space, and continue to afford all the light and air possible. Pot the plants firmly in a compost of fresh fibrous turf, a little mortar rubble and wood-ash. Manure is not necessary.

STRAWBERRIES.—Young plants layered in 3-inch pots, as advised in a previous calendar, should be severed from the parent plants directly the roots reach the side of the pots. Remove the plants to an open and convenient position for their final potting, which should be commenced a few days afterwards. In the meantime prepare the compost as follows. To every four barrowfuls of fresh, strong, maiden loam add one barrowful of manure from a spent Mushroom-bed (or a little more if the soil is light in texture), and four 6-inch pottes of bone-meal. The compost should be turned several times and a light sprinkling of soot added at every turning. The addition of fine lime or mortar rubble is an advantage, in fact I prefer a little extra fine rubble and a little less Mushroom-bed manure, which attracts worms and has a tendency to cause sourness. Pots of 6-inch diameter are in every way preferable to other sizes, and they should be cleansed and efficiently drained. Sprinkle a little soot and mortar rubble over the crocks if fine holes are not available. When transferring the plants to their fruiting pots make a firm base to the ball of roots to rest on. The soil and roots should be moist at the time of potting. Leave sufficient space in the pot to permit of adding fresh compost to a depth of half an inch later. Place the plants close together on an ash bottom that has been well dusted with soot or lime to prevent worms from entering the pots. For a few days the plants may be shaded from direct sunshine, but after they have recovered from the disturbance let them be fully exposed to sunshine. The plants having been well watered through a fine rose, light syringings in the mornings and evenings generally suffice for a short time after they should be examined twice daily to see if more water is needed at the roots.

THE ORCHID HOUSES.

By J. COLLIER, Gardener to SIR JEREMIAH COLMAN, Bart., Gatton Park, Reigate.

PLEIONE.—The Orchids commonly known as Indian Crocuses are in full growth, and well-rooted, strong specimens should receive a plentiful supply of water, and be given weak liquid cow manure occasionally. This treatment should be continued until the foliage shows signs of maturity, when less moisture should be applied, and the use of liquid manure discontinued. When the leaves begin to fade, water should be withheld gradually, and only sufficient given to prevent shrivelling. Pleiones grow best suspended in a light position near the roof-glass in the intermediate house.

ODONTOGLOSSUM.—Plants of the dwarf Mexican species of Odontoglossum, such as O. Rossii, O. Cervantesii, O. aspersum, O. Galeottianum, O. madrense, O. maculatum, and many of their hybrids will now have become active at the roots, and any repotting or resurfacing required should be attended to at this period; shallow Orchid-pans, without side holes, form the most suitable receptacles, and may be suspended from the roof-rafters of the cool house. A suitable compost is equal proportions of A1 fibre and Sphagnum moss (cut up rather short), and a sprinkling of crushed crocks. The materials should be well mixed together. Pot firmly, placing the base of the plant just below the rim of the pan, and finish off with a surfacing of living Sphagnum moss. Afford water sparingly until the roots have grown freely into the new material, and then afford liberal supplies until the growths are complete. When in full growth these Orchids will be benefited by light overhead sprayings, and, being moisture-loving plants, they should be placed in a damp position in the house.

DENDROBIUM.—The cool growing species, D. Jamesianum and D. infundibulum, should as they start into new growth, be repotted or resurfaced as found necessary. These plants may be grown in pans and suspended, or in pots standing on the stage, but in either case it is important that they be kept well up towards the roof-glass, so that they may receive plenty of light. When growing actively they should be liberally supplied with water, but they must be kept rather dry after growth is complete, though never quite dry, as pseudo-bulbs and leaves should be kept in a plump, healthy condition. D. Victoria Regina should be grown in the same house in a moist, shady position; shallow Teak-wood baskets form the most suitable receptacles, with clean Sphagnum-moss as a rooting medium.

PLATYCLINIS.—The pretty Platyclinis filiformis is now in full growth and will soon be sending up its long, thread-like spikes of small yellow flowers; until the flowers open the plants will be benefited by daily overhead sprayings. When P. glumacea has completed its growth it will need very little water at the roots, but must never become sufficiently dry to cause the pseudo-bulbs to shrivel. The leaves should be sponged occasionally in order to keep them free from red spider and other insects. All species of Platyclinis thrive well if suspended or stood near the roof-glass in the shadiest part of the intermediate house. The plants may be repotted just after the flowers have faded, or as soon as new growth is commencing. Pots from the most suitable receptacles, using a compost consisting of equal proportions of A1 fibre, peat-fibre and Sphagnum-moss. After repotting the plants should receive very little water at the roots, merely sprays to the surface of the compost will be sufficient to keep it moist. P. filiformis and P. glumacea do well in the cool house.

THE FLOWER GARDEN.

By R. P. BROTHERSTON, Gardener to the Earl of Haddington, Tyninghame, East Lothian.

REMOVAL OF SEED VESSELS.—Delphiniums [illegible] the soil's heat [illegible] to form seeds. The same [illegible] polyphyllus are easy to keep [illegible] flower by cutting out the seed [illegible]. The general effect of this proceeding will be [illegible] delayed. Aquilas and Pæonies must be hand-picked as soon as the seed vessels are seen to be having a prejudicial effect on flower production. A good plan is to pull off every open flower as well as the seed capsules as the inspected beds will, in a wonderfully brief period, again cover the plants with bloom.

BUDDING.—Roses are not so commonly budded [illegible] as was the case 30 or 50 years ago, when it was common to see a bed of Roses for cut-flower standards. Other shrubs besides Roses may be budded now, and it is quite [illegible] important to re-bud some stocks with better varieties. Crataegus may be instanced as a group of great interest that may be budded now on common Thorns.

CARNATIONS.—Layering Carnations may be proceeded with at any time now. Select the best of the current year's "grass" and remove the rest to afford the layers more space to gain strength. A simple method of layering consists in notching the shoots instead of twisting them up or down, according to each method the grower inclines. The shoots are pinned close to the ground, or may be held in position by means of a stone heavy enough to keep it from rising. I have seen quantities propagated in this way with considerably less labour than the usual method.

GLADIOLI.—Short stakes are needed to keep the majority of Gladioli from falling about. One tie is sufficient if the work is performed in time, because the spikes naturally tend to grow upright. Where Gladioli are grown closely in rows a simpler method than a stake to each is to run a wire along the lines (support it by stakes here and there), and tie the spikes to the wire. An application of superphosphate to the surface of the soil will be of great help at the flowering stage, and will also increase the size of the corms. Wherever possible seeds should be saved as seedlings are healthier than offsets, and many may be of great beauty.

PLANTS UNDER GLASS.

By E. BECKETT Gardener to Lady WANTAGE, Lockinge Park, Berkshire.

VIOLETS.—It has been necessary to water Violets frequently this summer, and light sprinklings of water applied previous to watering have kept the plants clean and healthy. This treatment may be continued till the end of the season. Watering or syringing should always be done late in the evening. Disturb the soil between the plants to keep down weeds and remove all runners.

FREESIA.—Bulbs of Freesia [illegible] were forced last season are their [illegible] and may be shaken out of the pots, carefully graded, retaining the best for forcing. They should be placed in a cool, dry shed till required for repotting. Orders for new bulbs should be sent at once, as there is a great scarcity of all kinds of bulbs this season.

THE HOT-WATER SYSTEM.—By exercising great care during unfavourable weather in ventilating, watering and syringing plants in glass houses, the heat may be entirely dispensed with for the next few weeks. During this interval the whole of the heating system should be overhauled and put into good working order. Fuel for the heating of greenhouses will be very scarce during the coming winter, and this fact makes it doubly necessary that the boilers should be put in thorough working order, and all baking, pipes and valves attended to. An effort should be made to procure the allowance of fuel at once. It would also be wise to place under cover fallen tree limbs, to be cut into suitable lengths as required during wet weather. Timber of any kind will make very valuable supplement to the coal [illegible].

BEGONIA GLOIRE DE LORRAINE.—If regular attention is paid to the tying of the young shoots of this decorative Begonia the plants will grow into shapely specimens, and much time will be saved later. Green Bamboo tips and green raffia should be used to obtain the best results, and one stake will be ample except for very large specimens. When the pots are full of roots water the plants occasionally with soot water, and use a concentrated fertiliser. Make the best use of the sun's warmth by closing the house about 4 o'clock in the afternoons, after damping the borders and spraying the plants with tepid water.

THE APIARY

By CHLORIS

SWARMS.—Many bee-keepers are re-starting their apiaries, and have purchased bees from a distance. In these days of slow travelling there is a difficulty in transferring purchased bees to their permanent quarters, as the bees are irritable after utilising the honey with which the honey sac is gorged before swarming takes place. All that the bee-keeper has to do is to recall the honey sac in an artificial manner, and the can be easily managed by placing a quarter of a pint of syrup in a bottle inverted over the covering over the mouth of the skep about half an hour before putting the bees in the hive. In fact, this operation is always advisable when the bees have been in transit for 24 hours or more, and a few teaspoonsful of warm syrup will always make them safer and easier to handle after travelling, even though the journey has not taken the 24 hours. When bees are placed upon frames of foundation only, syrup feeding for a few days will continue to rapid comb construction, and during wet weather it is essential, if the bees are not to die of starvation.

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

APPOINTMENT FOR THE ENSUING WEEK.

TUESDAY, JULY 30—
Roy. Hort. Soc. Coms. Meet.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 6°.

ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, *Thursday*, July 25, 10 a.m.: Bar. 29.8, temp. 65° Weather: Cloudy.

Trade Re-organisation and Co-ordination.

For some years past commercial horticulture has suffered from the lack of combined organisation adequate to the expansion of the trade in recent times. If we may judge, however, from reports which now reach us from various sources, it would seem that earnest efforts are being made to make up for lost time in this respect, with the result that the trade will shortly have machinery (both constructive and defensive) at its disposal, worthy of the vast amount of labour and capital employed, as well as of the important part which it bears in the national economy.

There was a time, within the memory of many still living, when no organisation worthy of the name was in existence. For instance, in the year 1888, a Board of Trade Committee sat under the presidency of Lord Balfour of Burleigh, to fix the classification of goods for carriage by rail, the rate to be paid for conveyance depending upon the particular class in which goods were placed. With the exception of Mr. Berry (who gave evidence on behalf of Cherries and one or two other fruits), not a single witness appeared to urge the claims of horticultural produce to favourable treatment, and the trade has suffered from that omission for nearly 30 years past!

It is very probable that a new railway classification will be compiled when the war is over, and there are many other difficult problems awaiting solution, in connection with which it is of vital importance that the interests of horticulture should be carefully watched. For instance, the Government is now appointing a Committee to inquire into the whole system of inland transport, and at least one leading article has appeared in the daily Press urging that the railway companies should not be too strongly represented on that Committee. It may safely be assumed that the railway companies are already prepared with their evidence and statistics, but it would appear that at the present moment there is no trade organisation whose duty it is to make similar preparations on behalf of horticulture in all its branches.

Again, for instance, it has been announced within the last few days that after September 1 next no vehicle is to carry on the public roads a load of more than 15 cwt. without a Government licence. Furthermore, there is considerable uneasiness in various trades with regard to such matters as the growing practice of the Government to require persons to take out licences to carry on their businesses; to the increasing powers of Allotment Holders' Associations and Co-operative Societies (who pay no income tax and who claim to be supplied with goods at prices little above wholesale cost); and to the growing tendency of Government Departments to enter the commercial arena, in the capacity of both buyers and sellers, at the possible expense of the ratepayer. Retail is are beginning to feel that they are officially looked upon as an unnecessary medium of distribution, and other important matters await solution in connection with the increasing depletion of horticultural labour and the rise in cost of production due to higher wages and ever growing prices of material. Matters of this kind are no longer left to be regulated by the law of supply and demand, but are controlled by Orders and Regulations which have the effect of Acts of Parliament, issued almost daily.

In these circumstances, it is fortunate that many of the Government Departments are abandoning their historic attitude of reserve, and are showing a welcome readiness to co-operate with recognised leaders of the trade by means of Advisory Committees. This rapprochement of public officials and trade leaders is of the highest importance to both parties. Commercial men are able to gain light as to the difficulty of various problems which Governments are from time to time called upon to face; on the other hand, officials, whose experience in trade matters is perforce sometimes more theoretical than practical, are enlightened as to the peculiar trade conditions, and are thus able to obtain reliable knowledge with regard to the inner working of the delicate machinery with which it becomes their duty to interfere.

Hitherto there has been almost complete lack of co-ordination between the various trade associations which watch the interests of the several branches of horticulture. The result has been considerable overlapping of effort and unnecessary expenditure of time and money, and frequently the Government has been somewhat at a loss to decide which of various trade associations is entitled to speak with authority as representative of the various interests. It is satisfactory, therefore (as was announced on p. 30 in the last issue), that a Chamber of Horticulture is now being inaugurated, which, if properly supported by the trade, will constitute a central body, able to speak and act with one voice on behalf of the various affiliated associations. It is announced that there is no intention of encroaching upon the work already so ably performed by the Royal Horticultural Society on behalf of the science of horticulture, nor is there any intention of interfering with the work of the various trade associations on behalf of their respective sections. These will enjoy a free hand as heretofore, and the Chamber of Horticulture will in effect perform on their behalf the same functions as are exercised by the Railway Clearing House on behalf of the various railway companies. The latter, of course, still manage their own internal economy, but when their interests are threatened, or when the adoption of some constructive policy becomes desirable, the Railway Clearing House enables them to speak and act with complete unity and co-ordination of effort.

It will, of course, be to the advantage of the affiliated associations to increase their membership and set their own houses in order, so that they may secure adequate representation on the Council of the Chamber, and it is satisfactory to learn that this point of view appears to be fully recognised by the trade. The Horticultural Trades' Association of Great Britain and Ireland, for instance, is drastically reorganising its constitution, and is taking steps to form representative Committees in various parts of the country, so that each member of the trade may have a voice in its affairs on the principle of "one man one vote."

Another strong body which has recently come into existence is the United Council of Seed Trade Associations, which devotes itself specially to the interests of the seed section of horticulture and agriculture, and which links up in that respect the Agricultural Seed Trade Association, the Scottish Seed Trade Association, the Irish Seed and Nursery Trades Association, the Liverpool and District Seed Trade Association, and the Irish Wholesale Ryegrass Machiners' Association, in addition to the seed section of the Horticultural Trades Association. Co-ordination, in fact, is in the air, just as agriculturists are already taking similar steps on their own behalf to act through a general Agricultural Council.

In various other respects, strong bodies of this nature may prove to be of incalculable benefit to the nation; for instance, in connection with problems involving reconstruction after the war, and in the development of the commerce of the Empire. It is safe to assume that the German nation already has its machinery prepared in this respect, and it is certainly encouraging to find that the commerce of the British Empire is at last abandoning its time-dishonoured policy of "laissez-faire," and is taking steps to organise itself. Evidently the lessons which have been burnt into the memory of the nation since the year 1914 are bearing fruit.

ROYAL VISIT TO ALLOTMENTS.—Their Majesties the KING and QUEEN paid their long-promised visit to the allotments in South-West London on the 20th inst., accompanied by Mr. ROWLAND E. PROTHERO, the President of the Board of Agriculture, and attended by Colonel CLIVE WIGRAM and Captain BRIAN GODFREY FAUSSETT. The allotments at Putney Lower Common were the first inspected. Here the allotment holders were present with their wives and children, and as their Majesties, who had been received by the civic authorities, passed along the central path, they were able to note the splendid rows of Potatos and Onions, the latter being a special feature. The royal visitors stopped here and there chatting with the allotment holders, who pointed with pride to their crops. Their Majesties next visited the Wimbledon Park Piggeries and Allotments. These allotments represent a great stretch of intensely cultivated ground, flanked by outbuildings wherein pigs and rabbits are fed, in the main, on waste produce from the allotments, which were also inspected. At the London and South Western Railway's power station their Majesties were received by the Chairman of the company, the chief of the power station, and the Chairman of the Allotments Committee, who conducted them to the allotments worked by the men employed at the power station. This land, which was until recently derelict, was covered with splendid crops. The owner of the first prize plot was congratulated by their Majesties, and QUEEN MARY accepted Carrots and Peas from a display of grand vegetables which he had grown. The next visit was made to the Ridgway Place Allotments, Wimbledon. These privately acquired plots are situated on a disused building site, and thanks to the energy of Mr. G. W. DAMPNEY, the Chairman of the Surrey Horticultural Sub-Committee, and Dr. ELLIOTT, the Secretary of the Wimbledon Home Produce Society, the whole of the hitherto derelict area has been turned into splendid allotments. The next visit was paid to Merton Park, where their Majesties were received by the Chairman of the Urban District Council, the Chairman and members of the newly-formed Horticultural Committee for Surrey, and Mr. E. W. JOHNSON, Master of the Merton Schools, who conducted their Majesties round the allotments cultivated by the boys of his school. These school allotments comprise half an acre, and are worked on a commercial system by means of five classes, each consisting of fourteen boys from the school, which is quite right. This good work is only typical of what is being done over the whole of Surrey, in which county there are over 200 similar school gardens. Their Majesties next visited Tooting and Battersea Rise on the north side of Clapham Common, and were received by the Mayor of Battersea, the venerable Town Clerk, and the Chairmen of the various Allotments Associations. These gentlemen escorted the KING and QUEEN through the plots. Their Majesties chatted with the men, their wives, and children, admired the splendid rows of Peas and Potatos, and asked many and varied questions. His Majesty especially noticed the Vegetable Marrows, pointing out their usefulness for jam making in this year of fruit scarcity. With this visit the greatest day the allotment movement has ever had came to an end.

RESIGNATION OF LORD LEE.—At the moment when the first fruits of the strenuous and successful campaign of increased food production are maturing, the Director General of the Food Production Department has found himself compelled for reasons of policy to resign his appointment. Those who know how strenuously and unremittingly the Department has laboured to perform its task, and who appreciate the fine qualities of leadership which Lord LEE has shown, will learn of his resignation with deep regret; nor will they be able to conceal their apprehension lest the great programme of cultivation with which his name is identified may suffer from the absence of his guiding hand and energetic personality. Horticulturists—as has been pointed out elsewhere in these columns—have special reasons for gratitude to Lord LEE, who, from the day of his assumption of office, has shown clear and practical recognition of the important part which intensive cultivation must play in any scheme devised with the object of making this country more self-supporting with respect to food supplies than it has been in the immediate past.

HONOUR FOR SIR DANIEL MORRIS.—At the graduation ceremony of the University of Wales, held at Cardiff on Friday, the 19th inst., the degree of Doctor of Laws, Honoris Causâ, was conferred on Sir DANIEL MORRIS, K.C.M.G., in recognition of his scientific services to tropical agriculture.

ESTABLISHMENT OF NATIONAL FORESTS IN THE UNITED STATES.—Under a law passed in 1911 President WILSON has established, by proclamation, 5,000 new forest reserves in the Eastern United States. One at White Mountain covers about 300,000 acres in Maine and New Hampshire; the second, Shenandoah, occupies 165,000 acres in Virginia and Western Virginia; and the third, Natural Bridge, also in Virginia, has an extent of 90,000 acres. Previously the only existing national reservations were the Pisgah and Alabama forests.

WART DISEASE OF POTATOS: TRIALS AT ORMSKIRK.—In view of the great importance of planting only immune varieties of Potatos in land infected with or threatened with wart disease, Potato growers are invited to visit the Ormskirk Potato Trials, which will be open to the public on August 1, 2 and 3. The trials include the testing of over 500 varieties for immunity from wart disease, and are being conducted in the fields of the Ormskirk Poor Law Institution, which is within a short distance of Ormskirk railway station. The grounds will be open each day at 11 a.m., and Mr. J. SNELL, Inspector of the Food Production Department of the Board of Agriculture, who is in charge of the trials, will be in attendance to give information to visitors.

FOOD PRODUCTION IN MESOPOTAMIA.—The Euphrates irrigation scheme, so intimately connected with the Hindeh barrage designed by Sir WM. WILLCOCKS, and finished before the war, was not utilised by the Turks, and the canalisation work was never completed. Now, however, as a result of digging out about a hundred disused canals on the Hillah branch of the Euphrates during the past winter months, no fewer than 500,000 acres of land have been brought under cultivation, and the harvest promises to be a large and valuable one.

ELECTRICITY AND PLANT GROWTH.—It is of interest to note that recent investigations by Messrs. JOHNSON AND STILES into the history of electrical experiments on plants prove that the first experiments on the influence of electricity on the growth of plants were made as far back as 1746 by Mr. MAIMBRAY. Most modern research in this direction has followed on the lines of the

FIG. 38.—RHODODENDRON ROYALE (SYNSTIGMA). FLOWERS CRIMSON. (See p. 38.)

experiments of permanent, and, according to Messrs. JOHNSON and STILES sufficient care has not been taken to measure the electrical discharge, nor has it been fully realised that the stimulating effect may depend not only upon the intensity and time of the discharge, but also upon the particular stage of growth reached by the plant or crop treated; moreover, the influence of the electrical discharge may appear long after its application.

POTASH FROM SUNFLOWERS.—Those who grow Sunflowers should bear in mind that the ash obtained from the plants after the seed has been harvested is, owing to its richness in potash, a manure of considerable value. Of the ash obtained from burning the Sunflower stems, leaves and heads, 62 per cent. consists of potash, and as an acre of Sunflowers produces from 2,500 to 4,000 lbs. of top, the total yield of potash is considerable. Allowing 3,000 lbs. of top there would be produced 160 lbs. of ashes per acre of crop, which should contain upwards of 50 lbs. of potash. After the seed crop has been gathered,

therefore, the tops of the plants should be collected and burnt, care being taken to choose a dry day. The ash should be stored in a dry place until required for use as manure for Potatos or other root crops in the following year. It should be spread over the ground before the Potato crop is planted at the rate of from ½ to 1 oz. to the square yard.

VEGETABLE EXHIBITIONS NOT TO BE TAXED.—The Board of Customs and Excise is our authority for stating that vegetable exhibitions (as opposed to flower shows) are exempt from the payment of entertainment tax, provided such exhibitions are not managed as a source of profit, nor converted into entertainments by means of bands or extraneous amusements.

ONION CULTIVATION IN THE BRITISH VIRGIN ISLANDS.—From a report on the Agricultural Department, British Virgin Islands, we gather that about a third of an acre was planted with Onions at Tortola Experimental Station, at the end of 1915. The weather conditions were not favourable at the time of seed sowing, but subsequently improved. Although no special cultivation was given, the crop of dry Onions amounted to 3,183 lbs., or at the rate of 9,564 lbs to the acre. The entire crop was purchased by the Tortola Onion Growers' Association for £12 15s., or at the rate of £38 5s. per acre.

SILAGE FROM SUNFLOWERS.—The value of the Giant Sunflower as a silage crop is discussed in the March number of *The Journal of Heredity* by F. B. LINFIELD, the Director of the Montana Agricultural Station. Trials were made of this plant in the higher valleys, where Beans and Maize were not well adapted owing to the uncertainty of their yield. In three successive years the yield of the Sunflower varied from 22-30 tons of green fodder per acre, being about 2½ times that of Maize, and more than twice as great as that of Lucerne, for the season. It had, moreover, the advantage of so shading the ground as to keep all weeds well under. Feeding experiments were made with it, both as a green crop and as silage. Cows were found to eat it as readily as Maize fodder, and control experiments showed that the milk flow was maintained as readily as with the latter crop; nor was there evidence of any taint in the milk. A portion of the Sunflower fodder was put into the silo and fed in the winter, both to cows and fattening steers, with satisfactory results. Unfortunately a chemical analysis of the green crop was prevented through the destruction by fire of the Department's laboratory. The author states that further experiments are in progress. Meanwhile it might be worth the attention of agriculturists in this country as a crop for silage. It matures in this climate better than Maize, and, consequently, would not be so liable to become sour in the silo. At the same time its relatively high oil content would probably render it valuable at a time when cake is so scarce.

A NEW STRAIN OF ASPARAGUS.—According to the United States Department of Agriculture a new and distinct strain of Asparagus has been raised by Mr. J. B. NORTON, an expert in the Bureau of Plant Industry. It is the result of ten years' work in cross-breeding and selection; its chief merits are uniformity of growth, increased productiveness, and a greater power of "resistance" as compared with older varieties.

PUBLICATIONS RECEIVED.—***Plant Products and Chemical Fertilisers.*** By S. Hoare Collins. (London: Baillière, Tindall & Cox.) Price 7s. 6d —***Report on Agriculture in Barbuda.*** (Agricultural Department, Antigua.)—***Income Tax and Super-tax, 1842-1919: Tabular View.*** (Edinburgh: Oliver & Boyd.) Price 1s. net —***Report of the Lawes Agricultural Trust, Rothamsted Experimental Station, Harpenden, 1915-17.*** With supplement. (Harpenden: D. J. Jeffery.)—***Croydon Vacant Lands Cultivation Society: Third Annual Report, 1917-18.***

RHODODENDRON ROYLEI.

THE name may not be approved by botanists, who sunk R. Roylei under R. cinnabarinum, but it stands firm with gardeners, who, quite reasonably, refuse to call the dusky beauty by the same name as the smaller-flowered orange or madder-coloured one. There are differences, quite bigs ones too, in the foliage of the two plants. The trouble is that other Rhododendrons of like character, bearing such names as blandfordiaeflorum, thibaudiense, pallidum, and intermedium have to be reckoned with. Still another is that illustrated in fig. 15, which Mr. Reuthe has had for years, and has obtained an Award of Merit for under the name of Roylei magnificum. It is a fine form, certainly the best Roylei I have ever seen, and I have seen many in Cornwall, Wales, Ireland, Leonardslee, and Kew. The flowers are of large size, very dark crimson in colour, with a sheen which in certain lights is almost silvery. Mr Reuthe probably knows the origin of his plant, I do not. Like the others mentioned, it is hardy enough to be quite happy out-of-doors in the neighbourhood of London, and it blooms in June and July, so that frost does not mar its beauty. I should say that Mr. H. J. Mangles used a good dark Roylei to cross with calophyllum when he bred the lovely hybrids H. J. Mangles and Rose Mangles, which, at Littleworth Cross, have for years been given a house to themselves, and when in flower are more like big-flowered Malayan Rhododendrons (Vireya) than Himalayan. Rose Mangles flowered in the Temperate House last year as I have never seen it anywhere else, and for weeks I was ready to declare this was the most lovely Rhododendron I had ever seen. I gave Mr. Reuthe a guinea for a little plant of his magnificum about five years ago, after seeing it at the Chelsea Exhibition, and it was not dear at that price. *H. Watson.*

HOME CORRESPONDENCE.

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

AMERICAN BLIGHT (see pp. 13, 28). — In December, 1915, one of your correspondents asked if there was any foundation for a report that Nasturtiums were destructive of American Blight. There was no reply, but I tried growing them on spoilers with marked success, in 1916 and 1917 the aphis almost entirely disappearing. This year I trusted to self sown plants, and they have not come up as well as I expected, and there is a small amount of the blight. I do not think the method will be effective in the case of large standard trees, as the Nasturtiums do not grow more than 7 or 8 feet high. *Arthur D. Nix, Mount Charles, Truro.*

—— I have never found spraying of much use for the destruction of woolly aphis, as it is necessary to penetrate the protective covering of "wool." For the past three years I have been experimenting with creosote, applied with a stiff paint brush. Half a badly infested Apple tree was treated with creosote, the remainder with paraffin. The paraffin treatment was partially successful, the creosote wholly so. So successful was it that I advised the application of a mixture of clay and creosote to Vines here (whilst dormant), so infested with mealy bug that the Grapes were uneatable last season. This season there is scarcely a bug to be seen in the vinery, and the Vines are much stronger in growth. The advantages of "creosote and clay" are: (1) It is cheap; (2) ready for use; (3) has great penetrative powers; (4) dries quickly. The use of this specific is a great advantage over poisons where birds or animals are kept. *C. F. Bridgett, Red Roofs Gardens, Teddington.*

MANURE FOR VEGETABLES (see p. 28).—Mr. Brotherton states that soot and poultry manure are better than sulphate of ammonia for Onions. This is naturally the case, since the only matter of manurial value in soot is sulphate of ammonia, but the poultry manure is very valuable, being rich in other plant foods. It would seem that sulphate of ammonia and poultry manure would be the better combination, and the addition of wood ash or sulphate of potash would be a better balanced artificial still. I have seen it stated that Onions stimulated with sulphate of ammonia or nitrate of soda lose their keeping qualities unless potash in some form is also administered, and I am of the opinion that this is true. *D. King Page, 25, Thicket Road, Anerley.*

A GARDEN WAR MEMORIAL.—In a garden in the East Riding of Yorkshire I recently visited I noticed a stone some 9 inches by 6 inches let into the wall outside one of the greenhouses, with the following inscription: "John Thacker, aged 18 (worked in these gardens). Killed in France, March 21, 1916." Such a memorial is an appropriate appreciation of the sacrifices which are being made by brave men for their country. *T. A.*

SOCIETIES.

ROYAL HORTICULTURAL.

Scientific Committee.

JULY 2.—*Present:* Mr. E. A. Bowles (in the chair), Col. Rawson, Dr. Rendle, Messrs. W. Hales, Bennett-Poe, Odell, Allard, Fawcett, Fraser, Worsdell, and F. J. Chittenden (hon. sec.).

Poppy Roots invaded by Grubs.—Mr. Fraser showed roots of Papaver orientalis invaded by the larvae of a burrowing beetle, probably a species of Otiorrhynchus, which had caused the death of the plants. Eelworms were also present, but they were of a non parasitic nature.

Coloration of Leaves.—Col. Rawson showed leaves of Virginia Creeper brilliantly coloured at the edges where sunlight had passed other leaves and fallen upon them. He also showed a Poppy of the Mikado type which had appeared in his garden apparently from seed of the common white form of the opium Poppy. This change he attributed to the incidence of certain rays of light.

Caterpillar Attack on Aconite.—Mr. Odell showed the cocoons of the moth Plusia moneta, which attacks Aconite. The insect was apparently introduced about fifteen years ago, and has spread widely since.

Thalictrum Chelidonii.—Mr. Allard showed a plant of Thalictrum Chelidonii, a large-flowered species from Asia, not at all common in gardens.

Various Plants. Mr. Bowles showed plants of Lilium candidum from Salonika with more leathery leaves than is common, and more crateriform flowers. He also showed Contranthus angustifolius which he had collected at Modane, and a hybrid between it and C. ruber.

Insects on Mistletoe Flowers. — Dr Rendle brought a list of insects caught by Mr. Bowles on Mistletoe flowers this spring. The insects, as determined by Mr K. G. Blair, were as follows: Diptera: Simulium reptans, 2 ♂♂; Musca corvina, ♂; Scatophaga stercoraria, 2 ♂♂, 3 ♀♀; Limnophora septemnotata, 1 ♂, 4 ♀; Leptis nigripes, 2 ♂; Chloropisca notata, 4; Phora, sp. 2; Hymenoptera: Ichneumonidae, 1; Phytogota: Capsidae, 1.

JULY 16.—*Present:* Mr. E. A. Bowles, M.A. (in the chair), Dr. A. Voelcker, Messrs. J. Fraser, W. C. Worsdell, H. J. Elwes, Col. H. C. Rawson, W. E. Ledger, and F. J. Chittenden (hon. sec.).

Abundance of Poppies.—Dr. Voelcker drew attention to the remarkable abundance of the common field Poppy in Wheat fields this season, and especially upon a plot in the Woburn Experimental Farm where Wheat following Tares fed off with sheep was a poor plant, while Poppies were abundant; on the adjoining plot where the treatment was the same except that Mustard had been fed off instead of Tares, the Wheat was a good crop and Poppies practically absent.

Scalade attacked by Gall Weevil. Mr Fraser showed a specimen of Scalade stem with a chain of galls several inches long, produced by the gall weevil (Centorrhynchus sp.). These galls are usually found only at the ground level.

Doubling of Various Flowers, etc. Col Rawson exhibited further specimens of Poppy flowers showing colour and form changes which had arisen in his garden, and which he attributed

to exposure to certain light rays. He called attention to the change of stamens into petals in the doubling of the Poppy, and to the presence of inverted spurs in double Aquilegias and Tropæolums from his garden.

Excrescence on Cauliflower.—Mr. W. C. Worsdell showed a developing inflorescence of Cauliflower in which the group was composed not as is usual of a mass of hypertrophied flower stems, but of thousands of flower buds with a few leafy bracts among them.

Disappearance of the Bee Orchis.—Mr. H. J. Elwes remarked upon the scarcity of information regarding the life histories of British Orchids, and gave an instance of the remarkable appearance of flowering plants of Bee Orchis last year in a wood cleared four years before, whereas this season none is to be found.

Proliferation in Echeveria setosa.—Mr. W. E. Ledger showed a plant of Echeveria setosa from his garden in which the flowering axis in one case bore a rosette of leaves at its tip without flowers, while in another a flowering shoot sprang from just beneath the rosette.

Curled Mustard.—Mr. A. Ireland sent a plate of the Chinese Curled Mustard, which he said he had found to make an excellent salad, and very good food for rabbits. The plant he had found as a weed in waste places; it is easily raised from seed sown in April.

Tall Antirrhinum.—From Mrs. Wilson of Merstham, Surrey, came an account of an Antirrhinum which had attained the height of 6½ inches. This was apparently a further instance of the occurrence of a giant race of these plants such as has previously been brought before the Committee, and would doubtless breed true if self-fertilised.

Spadix Lesion in Tobacco.—Mr. E. M. Holmes sent a remarkable specimen of Aberdeen officinalis with fasciated and spirally twisted stem 6 ft. 2 in. inch in breadth. He also sent a specimen of the inflorescence of Aegopodium sylvaticum with numerous beaks, bracts among the flowers.

Cultivated Sparrow.—Some discussion took place regarding the Sparrow grown on the Continent for feeding sheep. It is sometimes distinguished by agriculturists from Spergula arvensis under the name of *S. maxima*, but is usually regarded as a form scarcely meriting a varietal name of that species.

TRIALS AT WISLEY.

The following awards have been made by the Royal Horticultural Society after trial at Wisley:—

AUTUMN SOWN LETTUCE.

AWARDS OF MERIT.

Brabazon White Winter, sent by Messrs. Barr and Sons.

Stanwood Park, sent by Messrs. Nutting and Sons.

HIGHLY COMMENDED.—Commodore Nutt, sent by Messrs. Sutton and Sons; Immense Hardy Green, sent by Messrs. E. Webb and Son; Tom Thumb, re-selected, sent by Messrs. J. Carter and Co., Barr and Sons, and Robert Sydenham, Ltd.; Tremont Winter, sent by Messrs. Barr and Sons; White Madeira, sent by Messrs. Barr and Sons; Wonderful, sent by Messrs. E. Webb and Son; Yates' Winter, sent by Messrs. Barr and Sons.

COMMENDED.—McHattie's Giant, sent by Messrs. Kent and Brydon; Schofield's Hardy Winter, sent by Messrs. Barr and Sons.

HERBACEOUS PÆONIES.

AWARDS OF MERIT.—*Duchesse de Nemours* No. 85, sent as alba sinensis, both by Messrs. T. S. Ware, Ltd.; Nos. 90, 111, *festiva maxima*, sent by Messrs. Ware and Messrs. Kelway and Son; Messrs. Kelway's plant was sent as Hon. Mrs. Portman; *Lady A. Duff*, sent by Messrs. Kelway and Son.

HIGHLY COMMENDED.—Dawn, sent by Messrs. Barr and Sons; L'Elégante, sent by Messrs. T. S. Ware, Ltd.; Marshal Oyama, sent by Messrs. R. H. Bath and Co.; Mme. Crousse, sent by Messrs. R. H. Bath and Co.; (129, 130) Mons. Chas. Lévêque (syn. Mlle. Léonie Calot), sent by Messrs. R. H. Bath and Messrs. T. S. Ware, Ltd.; The Marquis, sent by Messrs. Kelway and Son; Virginie, sent by Messrs. R. H. Bath, Ltd.

COMMENDED.—Pride of Langport and Rosea both sent by Messrs. Kelway and Son.

ROYAL SCOTTISH ARBORICULTURAL.

JULY 3.—A general meeting of this Society was held at 5, St. Andrew Square, Edinburgh on this date, the Duke of Buccleuch, K.T., President, in the chair.

The following resolution, which was moved by Mr. A. D. Richardson, and seconded by Mr. Robert Allan, was adopted by 45 votes to 3, and it was agreed to send it to the Cabinet Committee considering the question, to the Prime Minister, the Minister of Reconstruction, the Secretary for Scotland, the Development Commissioners, the Board of Agriculture, and the Scottish Members of Parliament:—"That this general meeting of the Royal Scottish Arboricultural Society welcomes the announcement that a Committee of the Cabinet has the question of forestry administration under consideration. The meeting desires to impress on Lord Curzon and Mr. Barnes the paramount necessity of placing the Central Control of Forest Policy under men conversant with the subject; of freeing the local administration in Scotland from the subservience to agricultural administration under which it has hitherto laboured; and of making immediate progress with the replanting of cleared areas and the planting of large additional areas, so that public opinion may be satisfied that steps are being taken to protect the country from the grave national danger of a timber famine in the future. The meeting respectfully requests the Government's representative, Mr. Master of Rosebery, to ensure that this Society should have an opportunity of considering and expressing its views on the subject of [illegible] before it comes [illegible]."

UNITED HORTICULTURAL BENEFIT AND PROVIDENT.

JULY 11.—The monthly meeting of the above Society was held at the R.H.S. Hall, on Monday, the 8th inst., Mr. Chas. H. Curtis presided. [illegible] were received. The receipts [illegible] £19 5s. 6d., expenditure for the month £7 3s. 10d. from these figures it will be seen that the sum of £21 1s. 8d. was passed for payment to the members of the deceased members [illegible] £1 1s. 8d., [illegible] £17 6s. 6d. and [illegible] £3.

TRADE NOTES.

NEW STOCK FOR ROSES.

As the importation of Manetti stock from Holland and France is now prohibited in America Rose growers in the United States have to decide which is the best home-raised Rose stock for their extensive use. At East Northport, New York, Mr. J. W. Kruckman has experimented with Rosa multiflora japonica and with so much success that he has sown 50 lbs. of seed obtained from Japan. There are said to be 350,000 to 400,000 seeds in the pound of seed, which, a hundred sample gives 200,000 seeds to the lb. Mr. Kruckman reads of his results with a good deal of what may prove to be a new American industry.

SALE OF A NURSERY.

WARD'S NURSERIES, Hanworth, Middlesex, and freehold estate, of about sixty acres, are to be sold by auction at The Mart, Tokenhouse Yard, E.C., on Wednesday, July 31, at 2 p.m. The estate, with the large building containing packing shed, offices, bulb store and seed shop, stabling for seven horses, a cart shed, a four-roomed cottage, and twenty-nine greenhouses, will be sold as one lot. The purchaser will have the option of taking stock and fittings at valuation, and if such option is exercised the goodwill of the business will be included in the sale.

CROPS AND STOCK ON THE HOME FARM.

MUSTARD.

Of all cattle crops grown on the farm Mustard is the most useful, in that it is more certain of success than any other plant grown for the purpose on any kind of soil or in any situation. It can be used as food for sheep in the place of other food, or it may be ploughed in as a green manure, so that it is equal to manure in preparation for cereal crops, especially Wheat. A crop of Mustard is especially valuable as a preparation for Wheat on a field that has been summer-fallowed with the object of cleaning it of Couch, Thistles, Docks, or Coltsfoot. The last named is especially troublesome in some districts, and difficult to eradicate by any other form of cultivation. Assuming such a field has been ploughed several times during the summer, cleaned, and sown to Wheat in October, Mustard is an excellent substitute for farmyard manure. Sow evenly about the second week in August 2 lbs. of Mustard seed per acre with a hand seed-barrow, and harrowing the ground afterwards. So quickly does the seed germinate, even if the surface has not a fine tilth, there need be no fears of failure. In ten weeks' time, given normal weather, the Mustard plant should be from 1 foot to 2 feet high. If other sheep food is scarce the Mustard can be fed off to sheep, or ploughed in, pressed, and sown with Wheat at will. Sometimes the Mustard attains a height of 3 feet before ploughing can be done. At this height it is difficult to bury effectively. A light roller drawn over the crop in front of the plough facilitates the burying of the plants. A more simple plan is to attach a weight by a piece of chain 2 feet long to a plough, allowing it to drag along the furrow, thus pulling in the tops of Mustard plant [illegible] other crops remain unburied.

CABBAGE.

Cabbages are now growing freely. The most expeditious way of planting large numbers of seedling Cabbages, especially if the plants are leggy, is to plough them in in every third ordinary 9-inch furrow, afterwards drawing a light roller over the surface to make the soil firm about the roots. Reject any plants showing the least signs of clubbing at the roots.

Those plants established will be accelerated in their growth by loosening the soil about them with a horse hoe or a "Planet" cultivator, cutting in weeds and admitting air to the roots. Established plants that require a fillip to growth should be given 1 cwt. of sulphate of ammonia per acre, sowing the fertiliser evenly over the plot.

When the soil is very dry, the best method of planting Cabbages is to water the sites before planting each seedling. When this is done, dibbling in the plants afterwards is an easy matter.

HIGH GRADE BASIC SLAG.

If it were necessary the present season has proved the value of a high grade sample of this fertiliser as compared with the results obtained from a low-grade quality.

Last December I applied 3 cwt. per acre of 40 per cent. basic slag on various plots of grass which have been in existence over 100 years, and on which this artificial had not been applied for at least six years. The result in the increased yield of grass, and especially of the finer types, commonly known as "herbage," was remarkable. The field produced an excellent crop of hay, which has no equal as food for dairy cows. In comparison with results in former years from basic slag of 30 per cent. grade there is a wide gain in the use of the higher grade samples.

Apart from its intrinsic value, the cost of transit and application is considerably less, and in these days of pressure of work under abnormal conditions the use of the higher grade fertiliser means a distinct saving.

The percentages of total phosphate included in terms of tribasic phosphate of lime vary from 12 to 42, while the price also varies from 6os. per ton to 100s. As this should be a valuable for grass on all types of soil, I strongly advise farmers to order early to ensure delivery by the end of October at the latest.

THE HARVEST OUTLOOK

Never have I seen the Wheat crop more promising than now; the difficulty is to find an inferior crop. The dry weather of spring and early summer suited the growth of this cereal where it was sown in good time, and the rains have come at an opportune moment to aid the swelling of the grain. The straw is tall and stiff and the ears well developed. My only fear is that with much wind and rains the crop may be "laid," and this militates against good quality corn and a rapid harvest, as there are certain to be many "grown" corns owing to the ears lodging on the soil, which quickly induces premature germination while in the ear.

Oats at one time promised to be a poor crop owing to drought, but where the seed was sown early in March, or earlier, and the land in good condition, growth of late has been surprisingly good, and the bulk of this crop promises almost an average yield; on newly ploughed grass land there are many excellent crops of Oats. On a 15 acre plot of White Hero Oats, following Wheat, I have promise of an abundant crop; the straw is tall, standing quite erect with large ears, betokening a heavy crop, and promising well for the future of this variety, which was raised by Messrs. Garton, Warrington.

Barley in many fields has suffered much from drought and late sowing. The straw is short and unpromising, while in other fields under better cultural conditions growth has been so vigorous that crops are already "laid." At one time, in South Hants, the harvest promised to be early, but the recent spell of cold weather has altered the outlook in that direction.

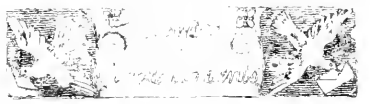
Malpensor

CONDITION OF THE CROPS.

Summarising the returns given in the monthly report of the Crop Reporters of the Board of Agriculture, and expressing an average crop by 100, the condition of the crops on July 1 indicated probable yields per acre which may be denoted by the following percentages:—Wheat, 105; Barley, 93; Oats, 95; Beans, 101; Peas, 99; Potatos, 100; Mangolds, 95; seeds hay, 99; meadow hay, 97; Hops, 70

Obituary.

MALCOLM TAYLOR MCINTYRE Mr. Malcolm Taylor McIntyre died at College Hills, Honolulu, Hawaii, on Wednesday, May 29 last. He was farm steward and manager, for the past eleven years, of the farm stock, Sugar Cane and Pineapple plantations at College Hills, the estate of the Hon. S. M. Damon, Moanalua, Honolulu. Mr. McIntyre was for many years gardener to Sir Charles Tennant "The Glen," Innerleithen, and while in the service of Sir Charles he was awarded the Nicl Prize for his exceptional abilities as a cultivator. Mr McIntyre was a highly skilled plantsman and fruit grower, and one of the few men who excel in all departments of gardening. While at "The Glen" he won many 1st prizes at exhibitions for splendidly grown Orchids. His son Donald was appointed gardener to the Hon. S. M. Damon at Moanalua, Honolulu, Hawaii, and a few years afterwards the father succeeded the son in the position. The pleasure grounds at Moanalua are extensive and very beautiful, and contain a large number of the finest flowering shrubs flourishing in the Hawaiian Islands, also large numbers of ornamental foliage plants and Tree Ferns. Mr. Damon is an ardent horticulturist. Orchids are, perhaps, his greatest favourites, and Mr. McIntyre was able, from his special knowledge of the culture and management of these plants, to aid Mr. Damon in forming a good collection. The climate of Honolulu is specially favourable to Orchids, and more particularly the Brazilian and South American kinds; Laelias and Cattleyas grow and flower profusely there, and Mr McIntyre had great success with the Torres Straits Dendrobiums, especially D. Phalaenopsis var. Schröderianum.



BLANKET WEED IN A LAKE: *J. E.* The waterweed which is choking up the lake is a species of Spirogyra; it is commonly known as the Blanket Weed. This and similar weeds may be destroyed with copper sulphate. Multiply the average length, width, and depth of the sheet of water; this will give, approximately, the content in cubic feet. Multiply the number of cubic feet by 6½, and the result will show the number of gallons. For every 100 000 gallons of water take 1 lb. of copper sulphate, break it finely, and place it in a bag of loose texture. Draw the bag through the water, forwards and backwards, in parallel lines 10 feet to 20 feet apart. The sulphate will dissolve in the water and kill the weeds. If proper proportions are used, and the work is done properly, the copper sulphate is not likely to harm fish.

CELERY LEAF BLIGHT: *D. S.* It is advisable to spray Celery plants now as a preventive against Leaf Blight. This disease is often confused with that caused by the leaf mining maggot of the Celery fly, but may be distinguished by the presence of innumerable minute black specks on the leaves and stems, and by the absence of the white spots with the maggots between the upper and lower skins of the leaf. Leaf Blight is caused by a fungus, and the black specks alluded to contain numbers of spores which spread the disease. The foliage suffers severely, and in bad attacks the whole plants are dwarfed and rendered useless. To protect the plants they should be sprayed with Burgundy mixture. This may be done at the same time the Potatos are being sprayed. If one or two further sprayings are given at intervals of about three weeks the plants should be able successfully to resist an attack.

COLOURED LATHYRUS FLOWERS AMONG CULINARY PEAS: *T. S.* The "rogues" among the Gradus culinary Peas appear to be specimens of Lathyrus tingitanus, a hardy annual species native of Tangier. It is a very old garden plant, though not commonly grown; how it came to be mixed with the culinary Pea we cannot explain, but it is just possible some plants of the species have been cultivated locally and the seeds distributed by birds or other agency.

DAMAGE TO DOUBLE PRIMULAS: *E. B.* We cannot say what has caused the damage, but it is obvious that something has eaten into, and in some cases through, the neck or "collar" of the plants, and decay has followed. It is probable that grubs of some kind have been imported with the leaf mould used in the potting compost; it is always a good plan to sterilise leaf mould before using it.

EFFECT OF CYANIDING ON FRUITS: *C.* Although cyaniding, if properly carried out, will kill insect pests in glass houses, it has no effect upon the fruits, nor are such fruits rendered poisonous. Hydrocyanic gas is generated as soon as the cyanide comes into contact with the sulphuric acid and water, therefore the "trapping" arrangements should be worked from the outside of the house by means of a cord or wire passed through the keyhole or similar small opening. As the gas is highly poisonous it is dangerous for anyone to remain in the house after the cyanide is placed in the sulphuric acid.

ESCALLONIA LANGLEYENSIS: *T. J. H.* The plant of Escallonia langleyensis being crowded with shoots, these should be thinned now by cutting away the weaker growths. This will allow light and air to enter the tree freely and assist in the thorough ripening of the wood. Next April cut the shoots back to within one or two eyes of the base, and adopt this system of pruning annually. Escallonias flower on the shoots of the current year, so there is no danger of the plants not flowering if the pruning is done in the spring.

FAILURE WITH POTATOS: *H. B.* The failure is due to over ripened "seed" tubers; such setts do not rot when planted, and unless the seed tuber decays the resulting crop is invariably very poor. Home-saved setts should be selected from a crop produced by Scotch or Irish seed, and it is a good plan to choose the setts from those plants which keep their foliage green for the longest period.

FRENCH HORTICULTURAL JOURNAL: *D. J. H.* A French publication suitable for your purpose is the *Revue Horticole*, this is issued bi-monthly, and published by M. Daniens, 26, Rue Jacob, Paris.

GARDENERS AND WAR SERVICE: *A. W.* Your best course will be to apply to the War Agricultural Executive Committee for a voucher; state your case as clearly and fully as possible, in writing, and show exactly what you are doing in the direction of food production, the area under cultivation, and the assistance you receive.

MILDEW ON GRAPES: *M. S.* The Grapes received give ample evidence of a bad attack of mildew. Dust the affected bunches and foliage with flowers of sulphur, and maintain a buoyant atmosphere in the vinery by the use of a little fire-heat and careful ventilation. As your vinery is near the river, and in consequence the Grapes very liable to attacks of mildew, there is the greater need of fire-heat, coupled with judicious ventilation, to dispel superfluous atmospheric moisture and prevent cold draughts.

NAMES OF PLANTS: *J. W.* 1, Lonicera Periclymenum var. belgica, known in gardens as the Dutch Honeysuckle; 2, Indigofera Gerardiana. *B. L.* Probably Hydrangea hortensis var Mariesii.—*J. J. Waters.* Allium Scorodoprasum, commonly known as Rocambole, or Sand Leek. The plant is grown for the use of its bulbs, and is cultivated in a somewhat similar manner to Garlic.

PLANTING FRUIT TREES: *W. S.* The general scheme appears to be good, but the cordon trees for the pergola should be planted not closer than 18 inches apart. Plums do not lend themselves to the cordon method of training as do Apples and Pears. A few bush Apples widely planted among the Gooseberries and Currants will add to the value of the plantation, especially if late varieties are chosen.

ROOKS AND WALNUTS: *T. E.* It is not an easy matter to prevent rooks from stealing Walnuts unless someone is always about with a gun. One of the mechanical bird scarers which produce a loud, intermittent noise and are worked by wind, would probably keep the birds away; they cost about 15s. or 20s. each.

SPOT AND MILDEW ON GRAPES: *A. B. C.* The Grapes are suffering from a bad attack of mildew and the disease known as "spot" (Gloeosporium ampelophagum). See also reply to *H. G.*, p. 20.

WHITE FLY ON TOMATOS: *A.* The White Fly or Aleyrodes vaporariorum, and the Tomato house may be cleared of the pest by fumigating with hydrocyanide. In a note by Mr. G. H. Head in the issue for March 16, 1918, p. 117, a method of destroying this pest by cyaniding was described in detail.

YELLOW LEAVES ON CUCUMBERS: *A. W.* Although the Cucumber leaves are not diseased they have a very unhealthy appearance. The yellowing is due, probably, to uncongenial conditions at the roots, such as cold and wet soil. Heavy soil, excess of moisture, and lack of drainage may have combined to prevent healthy root action, with a corresponding effect upon the foliage.

Communications Received. W. T.—J. H. B. & Son.—E. H. M.—F. & Son.—G. P. Miss E. A. W. G.—C. T.—E. L.—G. H. C.—E. J. B. P. A.—A. R.—Miss W. A. Davies.—W. I.—M. L. W.—J. A. F.—W. C.—H. G., Canterbury.

THE
Gardeners' Chronicle
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CONTENTS.

ILLUSTRATIONS.

THE MULBERRY IN LONDON.

MULBERRY gardens were formed both at St. James's Park and Queen's (or Park) in 1609 by order of James I. Of the single remaining tree on each of these sites though in one case labelled as having been planted at the instigation of that monarch—is evidently of no great antiquity, and, judged by comparison, can hardly be considered as either the largest or oldest of those at present growing within the metropolitan area. With the exception of the trees at Charlton, those in Cassiobl and Ruskin Parks and the grand old specimen in front of Mid-may Conference Hall (see fig. 16), it is probable that many of the Mulberries which were planted at the command of that monarch are now in existence in London.

By careful comparison of size with that of existing specimens whose ages are known, and taking into consideration the general condition of the tree and the quality of the soil in which it is growing, it is quite possible to arrive at a fairly accurate estimate of the age. Tradition and a label attached point to one of the old, shattered trees at Charlton Park, Blackheath, the residence of Sir Spencer Maryon-Wilson, as the first Mulberry brought to England, and certainly when the above points of comparison are taken into account there would appear to be substantial grounds for the statement. The largest tree, which has suffered much from storms, having lost the upper part of the stem in consequence, is still of giant proportions, the trunk girthing 8 feet 7 inches at 3 feet from the ground level, the greatest height being 20 feet and the diameter of branch spread 24 feet. Though the trunk is old and shattered, the globose head of foliage is perfectly healthy, and fruit is produced in abundance; though the tree is reputed to be three centuries old, there is no reason why it should not survive for another hundred years at least. The Mildmay Mulberry, though smaller in girth of stem, is, however, the largest both in height and branch-spread, and is in a wonderfully healthy state of preservation, which is, no doubt, largely owing to the position it occupies, as also to soil conditions and immunity from accident or disease, for there is not a dead or dying branch to be seen, while the trunk is perfect in every respect. This tree is 35 feet in height, the stem 6 feet 4 inches in girth a yard above the ground level, while the diameter of branch-spread is probably unique for a Mulberry, being no less than 60 feet. There are good specimens of the Mulberry in Ruskin and Vauxhall Parks, the stem girths being respectively 6 feet 7 inches and 6 feet 5 inches. Two others of still larger size, but difficult to measure owing to their recumbent habit of growth, are growing in Clissold Park and Waterlow Park, the stem girths being approximately 7 feet.

In 1609 James I. passed his famous edict for introducing the culture of the silkworm into this country, and, judging from the expenses of his household, not only planted Mulberries largely himself, but supplied trees to others at the low price of two farthings each. It is well known that the rearing of silkworms and spinning of silk was an industry at several parts of London, notably about Spitalfields, around Arbor Square, by the Commercial Road, and at Maida Vale, at all of which places remains of Mulberry trees are still to be found growing. Even at the present time lessons on silk-spinning are given in the pretty little Arbor Square gardens by a retired naval officer to the numerous children who congregate during play hours in this "little-known East-End retreat. Two healthy specimens of the Mulberry may be seen in these gardens, and several of much larger size were uprooted when a building close at hand was erected. It is

FIG. 16.—MULBERRY TREE IN MILDMAY PARK, LONDON.

but a few years since a fine old tree was blown down in Bunhill Fields burial ground, and another giant tree of the same kind stood in the Quaker's burial ground in Wheeler Street, Spitalfields, until a few years ago. Old gardens in the Maida Vale district contain some large specimens of the Mulberry.—*A. D. Webster.*

NOTICES OF BOOKS.

THE GENUS VIGUIERA.*

THE genus Viguiera is hardly known in cultivation at present, yet the genus comprises some 150 species, and it is very closely allied to Helianthus, now so fully represented in gardens, large and small. Indeed, the few species of Viguiera on record as having been in cultivation are mostly under Helianthus. For example, V. linearis as H. linearis (*Botanical Register*, plate 523). But it would puzzle a trained botanist to decide to which genus some of the species belong, as the main differential characters are furnished by the pappus. As limited by Mr. Blake, Viguiera is restricted to America, ranging from California, Nevada, Arizona, New Mexico and Texas through Mexico, the West Indies, Brazil and Colombia to Argentina and Chili, chiefly in temperate and sub-tropical regions. Less than half a dozen species occur north of Mexico. On the contrary, the distribution of the 80, or there about, species of Helianthus is very different, some 65 inhabiting the United States and Canada, with a small number in North Mexico, and a small isolated group in the mountains of Ecuador and Peru. The genus Viguiera yields a substance of economic importance.

* *A Revision of the Genus Viguiera.* By S. F. Blake. A thesis presented in partial fulfilment of the requirements for the degree of Doctor of Philosophy in Harvard University. Contributions from the Gray Herbarium of Harvard University. New series, No. LIV.; pp. 20; with three plates. (Cambridge, Mass., U.S.A., June, 1918.)

THE FLORA OF FORMOSA.

DR. BUNZO HAYATA'S *Icones Plantarum Formosanarum* has reached its seventh volume. This volume deals with species of various families, from the Berberidaceæ down to the Solanaceæ, and the Gramineæ occupy more than half of the volume. These number nearly 200 species, belonging to 70 genera, of which 44 are represented by only one species each. There is an unexpectedly large development of the Bambuseæ, twenty-two species of this tribe being recorded, the genera represented being Arundinaria, Phyllostachys, Bambusa, Dendrocalamus and Schizostachyum. One new genus of grasses is described under the name of Pseudopiptatherum. The volume also contains a synopsis of the Rubi of the island, numbering 26 species, which are illustrated by figures of their leaves. The plates, of which there are forty-one, represent nothing specially striking from a horticultural standpoint. Dr. Hayata's present estimate of the vascular plants of Formosa is 2,759 species belonging to 1,173 genera and 161 families.—*W. B. H.*

ORCHID NOTES AND GLEANINGS.

CATTLEYA SYBIL ROSEBANK VARIETY.

A FLOWER of the fine variety of the favourite cross between *C. Dowiana aurea* and *C. Iris-dawsoni* (bicolor × Eldorado) has been sent by J. Ansaldo, Esq., Rosebank, Mumbles, with whom it has recently bloomed. In size it equals Cattleya Eldorado, the scent of which is also present. The lip, with its inch-long isthmus, discloses the fact that *C. bicolor*, the original species, as is commonly the case, is the dominating parent. The sepals and petals are cream colour, delicately tinged and veined with light mauve; the showy labellum has the front side lobes pale yellow veined inside with rose; the median isthmus being bright yellow and the expanded front lobe ruby red with a delicate violet shade.

REPORT ON THE CONDITION OF THE OUT-DOOR FRUIT CROPS.

[FROM OUR OWN CORRESPONDENTS.]

THE WORDS "AVERAGE," "OVER," OR "UNDER," AS THE CASE MAY BE, INDICATE THE AMOUNT OF THE CROP; AND "GOOD," "VERY GOOD," OR "BAD," DENOTE THE QUALITY.

FULLER COMMENTS WILL BE GIVEN IN THE FOLLOWING NUMBERS. SEE ALSO LEADING ARTICLE ON PAGE 45.

COUNTY	APPLES	PEARS.	PLUMS.	CHERRIES.	PEACHES AND NECTARINES.	APRICOTS.	SMALL FRUITS.	STRAWBERRIES.	NUTS.	NAME AND ADDRESS.
SCOTLAND										
0, Scotland, N.										
CAITHNESS	Over; good	Over; good	.	Over; good	.....	.. ..	Average; good	Over; good	.. ..	W. F. Mackenzie, Thurso Castle Gardens, Thurso.
ELGIN	Average good	Under; bad	Under; good	Average; bad	.....	.. ..	Average; good	Average; good	.....	George Edwards, Ballindalloch Castle Gardens, Ballindalloch.
	Average	Under	Average	Under	.. ..	.....	Over; very good	Under	.....	James Jamieson, Easter Elchies Gardens, Craigellachie.
	Under; good	Under; bad	Under; bad	Under; good	Under; bad	Under; bad	Average; good	Average; good	.....	John Macpherson, 4, Hawthorn Road, Elgin.
SUTHERLAND	Under	Under	Under	Average	....	.....	Under	Average	.....	D. McIville, Dunrobin Gardens, Golspie.
1, Scotia, E.										
ABERDEENSHIRE	Average	Under	Average	Under	.....	.. ..	Average; good	Over; very good	.....	Simon Campbell, Fyvie Castle, Fyvie.
	Average good	Under; good	Under; good	Average; good	.....	.....	Under; good	Under; good	.. ..	James Grant, Rothienorman Gardens.
	Average good	Average; good	Over; very good	Average good	Over; very good	.....	Average; very good	Average; good	.....	John McKinnon, Haddo House Gardens.
BERWICKSHIRE	Under; good	Under; good	Under; good	Under; bad	Under; bad	Average; good	Average; good	Average good	.....	Thomas Nelson, Milne Graden Gardens, Coldstream.
	Under	Average	Average; good	Under; good	Under; good	Over; very good	Over; very good	Over; very good	.. ..	Peter Smith, Duns Castle Gardens, Duns.
CLACKMANNAN SHIRE	Under	Under	Under	Average	Average	Under	Under	Average	.. ..	Alexander Kirk, Consulting Gardener, Paton Street, Alloa.
EAST LOTHIAN	Under; good	Under; good	Under; good	Under	Over; good	Over; good	Average; good	Average; bad	.....	R. P. Brotherston, Tyninghame Gardens, Prestonkirk.
FIFESHIRE	Under	Under	Under	Under	.. ..	Average	Average	Under	.. ..	Chas. Simpson, Wemyss Castle Gardens, East Wemyss.
	Under; good	Under	Under	Under	.....	Under	Over	Average	.. ..	William Henderson, Balbirnie Gardens, Markinch.
	Under	Under	Under	Under	Under	Under	Average	Average		D. McLean, Raith Gardens, Kirkcaldy.
FORFARSHIRE	Under; bad	Under; bad	Under; good	Average; good	Under	.. ..	Under	Average	.....	Robert Bell, Kinnaird Castle Gardens, Brechin.
	Under	Average; good	Under	Under	.....	.. ..	Average	Under; good	.....	Andrew McArdle, Ruthven House Gardens, Meigle.
KINCARDINESHIRE	Average	Under	Over	Over	Average	..	Average good	Under	.....	William Thomson, Crie House Gardens, Stonehaven.
	Over	Average	Average	Average good	.. ..	..	Over	Average; good	.. ..	William Knight, Fasque Gardens, Laurencekirk.
LINLITHGOWSHIRE	Under; good	Under; bad	Under; good	Under; bad	Under; good	Average; good	Under; good	Under; bad	.....	John Highgate, Hopetoun Gardens, South Queensferry.
MIDLOTHIAN	Under; good	Under; bad	Under	Under; bad		Average; good	Average; good	Under; bad	...	A. C. Scott, Oxenfoord Castle Gardens, Ford.
	Under	Under	Under	Average	Average	Over	Average	Under	.....	William Aughton, Dalhousie Castle Gardens, Bonnyrigg.
	Under; bad	Under; bad	Under; bad	Under	.	Average	Average	Under	.....	James Whytock, Dalkeith Gardens, Dalkeith.
PEEBLES	Under	Under	Under	Average	.....	.. ..	Under	Under	.. ..	Wm. McDonald, Cardrona, Innerleithen.
PERTHSHIRE	Under	Under	Under	Average	.....	Under	Average; good	Under	.. ..	Thomas Lunt, Keir Gardens, Dunblane.
6, Scotland, W.										
ARGYLLSHIRE	Over; good	.. ..	Average; good	Average	.....	.. ..	Over; good	Over; good	Average	Henry Scott, Torloisk Gardens, Aros, Isle of Mull.
	Under; good	Under; good	Under; good	Average; good	Under	.. ..	Average; very good	Under; bad	.....	D. S. McIville, Poltalloch Gardens, Kilmartin
	Under	Under	Average	Average	...	.. ..	Average	Average	Under	George Haig, Barcaldine Gardens, Ledaig.
AYRSHIRE	Under; bad	Under; bad	Under; very good	Average; good	Average; very good	Under; good	Under; very good	Under; very good	Under; bad	D. Buchanan, Bargany Gardens, Dailly.
	Average good	Under	Under	Under	.	.. ..	Over; very good	Average; good	.....	John McInnes, Kirkmichael House Gardens, by Maybole.
	Under	Under	Under	Under	..	.....	Average	Under; bad	.....	William Priest, Eglinton Gardens, Kilwinning.
BUTESHIRE	Average	Under	Under	Under	Average	Under	Average	Average	.. ..	John J. Davidson, Ardencraig, Rothesay.
DUMBARTONSHIRE	Average; good	Under; bad	Over; very good	.. ..	Over; good	.....	Over; very good	Under; good	.....	Donald Stewart, Knockderry Castle Gardens, Cove.
DUMFRIESSHIRE	Under; good	Under; bad	Average; good	Under; good	.. ..	.....	Average; good	Under; very good	.....	James McDonald, Dryfeholm Gardens, Lockerbie.
	Under; good	Under	Under; good	Average; good	.. ..	Under; bad	Average; good	Over; good	.. ..	John Urquhart, Hoddam Castle Gardens, Ecclefechan

CONDITION OF THE FRUIT CROPS—(*continued*).

COUNTY.	APPLES.	PEARS.	PLUMS.	CHERRIES.	PEACHES AND NECTARINES.	APRICOTS.	SMALL FRUITS.	STRAWBERRIES.	NUTS.	NAME AND ADDRESS.
6. Scotland, W.										
LANARKSHIRE	Under	....	Under	Under	...	.	Average	Under	...	John Shields, Gardener to Carstairs, Lanark.
STIRLINGSHIRE	Under; bad	Under; good	Under	Under	Over; very good	Under	Average; very good	Over		John Middleton, Callendar House Gardens, Falkirk.
	Under	Under	Under	Average; good	Under	.....	Average; good	Average; good	Under	J. W. Cunningham, Dunfermth Castle Gardens, Blanefield.
WIGTOWNSHIRE	Average; good	Under; good	Over; good	Average; good	...		Over; good	Under		John Bayden, Dunrant Gardens, Dunragit.

ENGLAND:

2. England, N.E.										
DURHAM	..	...	.....	.	Under	Under	Under	Under	..	[illegible]
	Average	Under	Over	Average; good	...	.	Under; good	Average; good	Average	[illegible]
	Under	Under; bad	Under; bad	Under	...	Under	Average	Under; bad	...	W. Smith, Castle Gardens, [illegible]
NORTHUMBERLAND	Average; very good	Under; bad	Under; good	Under; bad	Average; very good	Average; good	Average; very good	Average; good	..	John Thomas, Cawston Hall Gardens, Stocksfield.
YORKSHIRE	Under; bad	Under	Under; bad	Under		Under; bad	Under; bad	Under; bad	.	[illegible]
	Under	Under	Under	Average	Average	Over	Average	Average	.	C. H. Tilford, North Riding, Asylum, York.
	Under; bad	Under; bad	Under; good	Under; bad	Under; good	Over	Average; good	Under; bad		Jas. E. Hathaway, Baldersby Park Gardens, Thirsk.
	Average; good	Under; good	Under; bad	Average; good			Average; very good	Under; bad	Under	Sidney Lee, Wather Pinon Gardens, York.
	Under	Under	Average	Average	Under	Under	Average	Under; bad	.	F. C. Puddle, Sampson Hall Gardens, Ellington.
	Under; bad	Under; bad	Average	Under	Average	Under	Average	Under; good	Under	A. F. Sutton, Castle Howard Gardens, Malton.
3. England, E.										
CAMBRIDGESHIRE	Under; good	Under; bad	Under; [illegible]	Under; good	Average; [illegible]		Average; [illegible]	Under; good		J. Spencer, Madingley, Easton.
	Under; good	Under; good	Under; [illegible]	Under; [illegible]	Average; [illegible]		Over; [illegible]	Under; [illegible]	Average; good	[illegible]
	Under	Under	Under	Under	Over	Over	Over	Average	Under	W. Woods, Chippenham Park Gardens, [illegible]
	Under; good	Under	Under; good	Under; [illegible]	Average	Over; [illegible]	Average; [illegible]	Under; [illegible]	.	Arthur Sewell, [illegible] Gardens, Ely.
ESSEX	Under; good	Under; good	Under; bad	Under; [illegible]	Average; [illegible]	Under; good	Average; good	Average; good	Under	William Johnson, Stansted Hall Gardens, Stansted.
	Under; bad	Under	Under	Average	Average; [illegible]	Over; good	Average; good	Average; very good	Under	Arthur Bullock, Copped Hall Gardens, Epping.
	Under; good	Under; bad	Under; bad	Over; bad	Average; [illegible]	Under; bad	Average; [illegible]	Average; good	Average; bad	C. Wakely, Cranes Gardens, Chelmsford.
	Under; bad	Under; bad	Under; [illegible]	Over; [illegible]	Average; very good	Over; [illegible]	Average; [illegible]	Average; good	Average; good	Charles A. Hardy, Orsett Hall, Grays, and Mr. Pope, Gardens, Bishop Stortford.
	Under	Under	Under	Under	Average	Over	Average	Average	Average	H. Easter, Painshill Gardens, Dunmow.
	Under; good	Under; good	Under; good	Under; bad	Average; very good	Average; very good	Average; very good	Average; good	Under; good	Edwin Cull, Shortgrove Gardens, Newport.
HUNTINGDONSHIRE	Under	Under	Under	Under	Under	Under	Over	Under	Average	James Hewett, Kimbolton Castle Gardens, Kimbolton.
	Under	Under	Under	Under; good	Average; [illegible]	Over	Average; [illegible]	Average; bad	Average	A. V. Cousins, Ramsey Abbey Gardens, Ramsey.
LINCOLNSHIRE	Under	Under; bad	Under; bad	Under; bad	Average	Average	Average; good	Average		[illegible]
	Under	Under	Under	Under	Average; good	Average; good	Average; good	Average; very good		[illegible]
	Under	Under	Under	Over	Under	Under	Under	Under		Thomas Cox, Hanton Hall Gardens, Lincoln.
NORFOLK	Under	Under	Under	Under	Average	Under	Over; good	Average; good	Under	J. Wyatt, Sedgeford Hall Gardens, Kings Lynn.
	Under	Under	Under	Under	Average	Average	Average; good	Average; good	.....	Isaiah Johnson, Catton House Gardens, Norwich.
RUTLANDSHIRE	Under; bad	Under; bad	Under	Average; good		...	Over; bad	Average; good	Under	Joseph Robinson, Somerby Hall Gardens, Oakham.
SUFFOLK	Under	Under	Under	Under		...	Under	Under	.....	E. G. Crick, Shrubland Hall, Bury St. Edmunds.
	Under; good	Under; good	Under; bad	Under; bad	Average; good	Average; good	Average; good	Under; good	Average	A. K. Turner, Orwell Park Gardens, Ipswich.
	Under; very good	Under; very good	Under; bad	Average	Under; bad	Over; good	Average	Under	.....	H. Cooke, Ickworth Gardens, Bury St. Edmunds.
	Under; Average	Under	Under	Average	Over; very good	Under	Under	Over; very good	Over; very good	E. E. Spurdy, Manor House Gardens, Bury St. Edmunds.
	Under; bad	Under; bad	Under; bad	Under; bad	Over; very good	Over; very good	Over; very good	Average	Under; bad	Alfred Andrews, Campsea Ashe Gardens, Wickham Market.
	Under; bad	Under; good	Under; bad	Under; good	Under; bad	Average; good	Average; good	Over; very good	Average; good	James Hixon, Elmham Hall Gardens, Suffolk.
4. Midland Counties										
BEDFORDSHIRE	Under; bad	Under	Under	.....	Under	Under	Under	Average	.....	Laxton Bros., 6, High street Bedford.
	Under; good	Under	Under	Under; good	...	...	Under; good	Under; good	Over; very good	W. H. Nebb, Woburn Experimental Fruit Farm, Edgmond, Aspley Guise.

CONDITION OF THE FRUIT CROPS—(*continued*).

COUNTY.	APPLES.	PEARS.	PLUMS.	CHERRIES.	PEACHES AND NECTARINES.	APRICOTS.	SMALL FRUITS.	STRAWBERRIES.	NUTS.	NAME AND ADDRESS.
4. Midland Counties.										
BEDFORDSHIRE (continued)	Under; bad	Under; bad	Under; bad	Under; bad	Average	Under; bad	Average	Under; bad	Under	Wm. F. Palmer, Froxfield Gardens, Woburn.
	Under; bad	Under; bad	Under	Under	Under	Average	Average	Average	.....	Thomas Pepper, Oakley House Gardens, Oakley.
	Under; good	Under; good	Under; good	Under; good	Average; good	Average; good	Under; good	Over; very good	Average	Thomas W. Stanton, Hinwick Hall Gardens, nr. Wellingboro.
BUCKINGHAMSHIRE	Under; bad	Under	Under	Under, bad	Under	Under	Under; bad	Under; bad	Average	W. Hedley Warren, Aston Clinton Gardens, Tring.
	Under; bad	Under; bad	.....	.....	...	Average; good	Under; bad	Under; bad	Average; good	James MacGregor, Mentmore Gardens, Leighton Buzzard.
	Under	Under, bad	Under	Under	Under; bad	Average; good	Average	Average	Under	William Turnham, Greenlands Gardens, Henley-on-Thames.
	Under	Under	Under, good	Under	Average; good	Under	Average	Average; good	Average	Chas. Page, Dropmore Gardens, Maidenhead.
	Under; good	Under; bad	Under, bad	Average; very good	...	Under; good	Average; good	Average; very good	.....	G. F. Johnson, Waddesdon Gardens, Aylesbury.
	Under; bad	Under, bad	Under	Under	Average	Under	Under	Under	Average	William Brooks, Missenden House Gardens, Amersham.
	Under; bad	Under bad	Under, bad	Under; bad	Average	Under; bad	Average	Average	Under	James Wood, Hedsor Park Gardens, Bourne End.
	Under	Under	Under	Under	Under	Under	Average	Average	Under	Philip Mann, 1, Stoke Road Villas, Aylesbury.
	Under	Under, bad	Under bad	Under	... ...	... ...	Over; good	Average	Under	W. Waters, Bulstrode Gardens, Gerrards Cross.
CHESHIRE	Average; good	Under; bad	Under, bad	Average	Average	Under	Average; good	Average; good	Under; bad	James Atkinson, Torkington Lodge Gardens, Hazel Grove, near Stockport.
	Under; bad	Under bad	Under bad	Under bad	Under; bad	Under; bad	Average; good	Average; good	Average; good	Philip Bolt, Manor House Gardens, Middlewich.
	Under; bad	Under, bad	Under; bad	Average	...	Average; good	Average; good	Average; good	Under	N. F. Barnes, Eaton Gardens, Chester.
	Under, bad	Under	Under, bad	Average; good	Average; good	Average; good	Average; good	Average; good	.....	Charles Flack, Cholmondeley Castle Gardens, Malpas.
	Under, good	Under, good	Under, bad	Under, good	... ...	... ...	Average; good	Average; good	.....	Alfred N. Jones, Marbury Gardens, Northwich.
DERBYSHIRE	Average; good	Under bad	Under	Average; good	... ...	Average	Average; good	Average; good	... ...	J. Maxfield, Darley Abbey Gardens, Derby.
	Under	Under	.....	... ...	... ...	...	Average	Over	... ...	F. G. Mills, Laneside Home Farm, Glossop.
	Under bad	Under, bad	Under, good	Under, good	... ...	Under, bad	Average; good	Average; good	...	J. Tully, Osmaston Manor Gardens, Derby.
	Under	Under	Under	Under	...	...	Average	Under	Under	E. Wilson, Hardwick Hall Gardens, Chesterfield.
	Under; bad	Under	Under	Average	... ...	... ...	Average, good	... ...	... ...	F. Jennings, Chatsworth Gardens, Bakewell, Chesterfield.
HERTFORDSHIRE	Under	Under	Under	Under	Average	Under	Average	Average	Average	Thomas Nutting, Childwickbury Gardens, St. Albans.
	Under; bad	Under; bad	Under, bad	Under, good	Over; good	Over; good	Average; good	Average, good	Average	Edwin Beckett, Aldenham House Gardens, Elstree.
	Under, good	Under	Under, good	Under, good	Average; good	Over; good	Average; good	Average; good	Average; good	E. F. Hazelton, North Mymms Gardens, Hatfield.
	Under; bad	Under, bad	Under, bad	Under; bad	Under; bad	Under; bad	Average, very good	Over; good	Under	William Fulford, Delrow House Gardens, Aldenham
LEICESTERSHIRE	Under, good	Under, bad	Under bad	Average; good	Average, good	.....	Average good	Average; good	Over; good	D. Roberts, Prestwold Gardens, Loughborough.
	Under very good	...	...	.....	Under; very good	Average; very good	Average; very good	Under; bad	Average; very good	W. Paterson, Swithland Hall Gardens, Loughborough.
	Under	Under	Under	.....	Under	Under	Average	Average; good	Under	F. Ibbotson, Rolleston Hall Gardens, Billesdon.
	Under	Under	Under	Under	Under	... ...	Average	Average	.....	A. Skirton, Burrough Hill Gardens, Melton Mowbray.
NORTHAMPTONSHIRE	Under, bad	Under, good	Under, good	Under; bad	Average; good	Average; very good	Average; good	Under; bad	Under; bad	J. Meager, Barrowden Hall Gardens, Wellingborough.
	Under; good	Under; good	Under, good	Average; good	Under, good	Under; good	Average; good	Under; good	.....	Robt. Johnston, Wakefield Lodge Gardens, Stony Stratford.
	Under, bad	Under, bad	Under; good	Average	... ...	.....	Over; good	Over; very good	Average	Alfred Child, Catesby House Gardens, Daventry.
	Under	Under	Under	Under	Under	Under	Average good	Average	Over	Harry Dunkley, Althorpe Park Gardens, Northampton.
NOTTINGHAMSHIRE	Under	Under; bad	Under	Average	.....	Over, good	Average	Average	Under; bad	James Gibson, Welbeck Abbey Gardens, Worksop.
	Under	Under	Under	Average	Average	Average	Average	Over; good	Average	S. Barker, Clumber Park Gardens, Worksop.
	Under, good	Under, bad	Under; good	... ...	...	... ...	Average; good	Average; good	... ...	Thomas Simpson, Newstead Abbey Gardens, Linby.
	Under	Under	Under	Under	...	Under	Average; good	Average; good	Under	Arthur C. Lehane, Park Hall Gardens, Mansfield.
	Under	Under	Under	.....	Under	Under	Under	Average	Under	J. R. Pearson and Sons, Lowdham.
OXFORDSHIRE	Under, good	Under	Under; good	Average, good	Average; good	Under	Over, very good	Over; very good	Average; good	John A. Hall, Shiplake Court Gardens, Henley-on-Thames.
	Under	Under	Under	Under		Under	Average	Average	Under	Arthur J. Long, Wyfold Court Gardens, nr Reading.
	Under	Under	Under, good	Average; good	... .	Average; good	Over; good	Over; good	... .	William J. Short, Middleton Park Gardens, Bicester.
	Under very good	Under, good	Under; very good	Under; bad	Under, very good	Under, good	Average; good	Average; good	... ...	T. W. Whiting, Shotover Park Gardens, Wheatley.
	Under	Under, bad	Under; bad	Under	Average; good	Under	Average; bad	Average	Average	Ben. Campbell, Cornbury Park Gardens, Charlbury.
	Under good	Under; good	Under; good	Under, good	Average; good	Average; good	Over; good	Average good	Under; good	C. E. Munday, Nuneham Park Gardens, nr. Oxford
	Under	Under	Under	Under	Under	Under	Average; good	Average; good	Over; good	Frank J. Clark, Aston Rowant Gardens
SHROPSHIRE	Under, good	Under	Under, bad	Under		Average	Over; very good	Average; very good	.....	George Adams, Lilleshall, Newport.
	Under	Under, bad	Under	Under; bad	Average, good	Over; good	Average; good	Average	.....	Samuel Passey, Moor Park Gardens, Ludlow.

CONDITION OF THE FRUIT CROPS—(*continued*).

COUNTY.	APPLES.	PEARS.	PLUMS.	CHERRIES.	PEACHES AND NECTARINES.	APRICOTS.	SMALL FRUITS.	STRAWBERRIES.	NUTS.	NAME AND ADDRESS.
4, Midland Counties.										
STAFFORDSHIRE	Under; bad	Under; bad	Under; bad	Under; good	Average; good	.....	Average; good	Under; bad	Average	H. Collier, Rolleston Hall Gardens, Burton-on-Trent.
	Under; good	Under; good	.....	Under	Average; good	Under	Under	Average	..	A. Cheney, Shenstone Court Gardens, near Lichfield.
	Under; good	Under; bad	Under; good	Under; bad	.....	Average; good	Under; good	Over; very good	Under; bad	E. Bannerman, Blithfield Gardens, Rugeley.
WARWICKSHIRE ...	Under; bad	Under; bad	Under; bad	Under; bad	Under; bad	Average	Average; good	Average; good	Under; bad	Chas. Harding, Ragley Gardens, Alcester.
	Under; good	Under; bad	Under; bad	Average; very good	Over; very good	.....	Average; very good	Under; good	Average; good	J. Smith, Wellesbourne House Gardens, near Warwick.
	Under; good	Under; good	Under; good	Under; bad	Average; good	Under; good	Average; good	Average; good	...	H. Dunkin, Mount Pleasant, Tipton.
	Under; good	Under; good	Under; good	Under; good	Average; good	Under; bad	Average; good	Over; very good	Average	W. Hannon, Newnham Paddox Gardens, Lutterworth.
5, England S.										
BERKSHIRE	Under	Under	Under	Average	...	Under	Under	Average	Under	Edw. Hart, Locking Gardens, Wantage.
	Under; bad	Under; bad	Under; bad	Under; bad	Average	Under; bad	Average; good	Average	Under	J. Mintv, Coxlease Court Gardens, Winds r.
	Under	Under	Under; bad	Under; bad	Average	Average	Average	Under	Average	Thomas Wilson, Castle Gardens, Wallingford.
	Under	Under	Under; good	Under; good	Average	Under	Average; good	Average	Under	A. E. Webb, Englefield Gardens, Reading.
	Under	Under	Under	Average	Average; very good	Over; good	Average; good	Average; good	Under	A. MacKellar, Royal Gardens, Windsor.
	Under; bad	Under; bad	Under; bad	Under; good	Over; good	Average; good	Average; good	Under; good	Over; good	Geoffrey Cooper, Ranworth, Malvern Road, Maidenhead.
	Under	Under	Under	Under	Under	Under	Average; good	Average	Average	W. Miles, Caversham Park Gardens, Reading.
	Under	Under	Under	Under	Average; good	Average	Average	Under	Average	E. Howard, Wyndham Valence Gardens, Newbury.
	Under; bad	Under; bad	Under; bad	Under; very good	Under; bad	Under; bad	Average; very good	Average; good	Under; bad	William Pappinz, Shinfield Manor Gardens, near Reading.
DORSETSHIRE	Under; bad	Under; bad	Under; bad	Average; good	Average; good	Under	Under	Under	Under	J. Tipton, Castle Gardens, Sherborne.
	Under; bad	Under	Under	Under	Under	...	Average; good	Average; good	...	H. Kemphall, Abbotsbury Castle Gardens, Dorchester.
	Under; good	Under; bad	Under; bad	Under; good	Under	Under	Average; good	Under; bad	Under	Thos. Denny, Down House Gardens, Blandford.
HAMPSHIRE	Under; bad	Under; bad	Under; bad	Under; bad	Average; good	Average; good	Over; very good	Average; good	Under; good	Lewis Smith, Cadland Park Gardens, Fawley, Southampton.
	Under; good	Under; bad	Under; good	Under; bad	Under; bad	Under; bad	Average; good	Average; good	Average; good	Henry Martin, Bartley Lodge Gardens, Cadnam.
	Average; good	Under; good	Under; good	Under; bad	Average; good	Under; bad	Average; good	Average; good	Under	Henry Fulbett, Ashe Park Gardens, Overton, nr Basingstoke
	Under; bad	Under	Under	Under	Under		Average; good	Average; good	Average	E. Molyneux, Swanmore Park, Bishop's Waltham.
	Under; good	...	Under; good	Under; good	...	Over; good	Average; good	Average; good	Under	A. W. Blake, Th. Castle Gardens, Highclere, Newbury.
	Under	Under	Under	Under	...	...	Average; good	Under	...	J. Carsley, Stratton Gardens, Micheldever
KENT	Under	Under	Under	Under	Under	...	Average	Average	Average	J. G. Woodward, Barham Court Gardens, Teston, Maidstone.
	Under	Under	Under	Under; good	Average; good	Average; good	Under; bad	Under; good	Over	E. A. Banyard, Allington, Maidstone.
	Under; bad	Under; bad	Under; bad	Under; bad	Under; bad	...	Average; good	Average; good	Under	Wm. Lewis, Iden Manor Gardens, Staplehurst
	Under	Under	Under; bad	Under; bad	...	...	Under	Under	Average	Geo. Fennell, Bowden, Tonbridge
	Under	Under	Under	Under	...	...	Under	Average	Under	Geo. Lockyer, Mereworth, Maidstone.
	Under	Under	Under; bad	Under; bad	Average; good	Average; good	Average; good	Under	...	J. J. Shaw, Bettshanger Park Gardens, Eastry.
	Under	Under	Under	Under	Under	Average	Average; good	Under; good	Under	J. G. Weston, Eastwell Park Gardens, Ashford.
	Under	Under	Under	...	...	...	Over; good	Average; good	...	Charles F. Shea, The Elms, Foots Cray
MIDDLESEX	Under	Under; bad	Under; bad	Average	Over; good	...	Average	Average; good	Average	H. Markham, Wrotham Park Gardens, Barnet.
	Under	Under	Under	Under	Under	...	Average	Average	Average	Wm. Poupart, Marsh Farm, Twickenham.
	Under; good	Under; bad	Under; bad	Under; bad	Under; bad	Under	Average; very good	Average; good	...	James Hudson, Gunnersbury House Gardens, Acton.
	Under	Under	Under	Under	Under	Under	Average; good	.....	... ...	John Weathers, Park View, Isleworth.
	Under	Under	Under	Average; good	...	Average; good	Average; good	Average; good	.....	G. H. Head, Fulwell Park Gardens, Twickenham, S.W.
SURREY	Average; good	Under; bad	Under; bad	Under; bad	Under	.....	Average	Under	Under	S. T. Wright, R.H.S. Gardens, Wisley, Ripley.
	Under	Under	Under	Under	Under	... ...	Under	Under	Average	James Watts, Mynthurst Gardens, Reigate.
	Under; bad	Under; bad	Under	Under	Under	Average	Under; good	Under; good	Average	James Lock, Oatlands Lodge Gardens, Weybridge
	Under; bad	Under	Under	Under	Average; good	...	Under; bad	Under; good	.....	Thos. Smith, Coombe Court Gardens, Kingston Hill.
	Under; bad	Under	Under	Under	Under	Under	Under; good	Under; good	Average	F. Jordan, Lord Mayor Gardens, Lingfield
SUSSEX	Under; bad	Under	Under	Under	Average	Under	Average; good	Average; good	Average	Arthur Wilson, Lindfield Castle Gardens, Tunbridge Wells.
	Under; bad	Under	Under; good	Under; good	...	.....	Under; good	Average; very good	Under	E. M. Bear, Magham Down, Hailsham
	Under; bad	Under	Under	Under	Average	Average; good	Average; good	Average; good	Under	W. H. Smith, West Dean Park Gardens, Chichester.

CONDITION OF THE FRUIT CROPS—(*continued*)

COUNTY	APPLES	PEARS	PLUMS.	CHERRIES.	PEACHES AND NECTARINES.	APRICOTS.	SMALL FRUITS.	STRAWBERRIES.	NUTS.	NAME AND ADDRESS
5. England, S.										
SUSSEX (continued)	Under	Under	Under	Under	Average		Average, bad	Under	.....	Leon Squibbs, Stonehurst Gardens, Ardingley.
	Under; bad	Under; bad	Under; bad	Under; bad	Average; good	Average; good	Average; very good	Average; very good	Under; good	J. W. Buckingham, Midland Place Gardens, Lipbook
WILTSHIRE	Under; bad	Under, bad	Under; bad	Average; under	Over; very good	Under	Average; good	Over; very good	... ..	W. J. Knight, Buckhill Cottage, Bowood, Calne.
	Under, good	Under; bad	Under; bad	Under; good	Under; good	Under; good	Average; good	Average; good	Under; good	T. Challis, Brother' Cottage Wilton, Salisbury.
	Under	Under	Under	Under	Under	Under	Under	Under	.. ..	Thomas Sharp, Westbury.
7. England, N.W.										
CUMBERLAND	Average; good	Over; very good	Average; good	Under; bad	Under; bad	Under; good	Average; very good	Average; good	.....	Andrew Watt, Naworth Castle Gardens, Brampton.
LANCASHIRE	Under	Under	Average	Average	...	.....	Average; good	Average	.....	Joseph Harris, Gawthorpe Hall Gardens, Burnley.
WESTMORELAND	Under; bad	Under, bad	Under; good	Under; good	.....	.. ...	Under; good	Under; good	. ...	W. A. Miller, Underley Hall Gardens, Kirkby Lonsdale.
8. England, S.W.										
CORNWALL	Under; bad	Under, very bad	Under	Under	Under	... .	Average	Under	. ...	W. Andrews, Tregothnan Gardens, Truro.
	Under	Under	Under	Under	Average, good	. ..	Average; very good	Average	.	I. Spilsbury, Clowance Gardens, Praze.
DEVONSHIRE	Under, good	Under; bad	Under; bad	Average; bad	Average; good	Average, good	Average, bad	Under, bad	.....	T. H. Bolton, Powderham Castle Gardens, near Exeter
	Under; very good	Under; very bad	Average; good	Under; very good	Average; very good	Average; very good	Under; very good	Under; bad	... ..	W. Lock, Eastcliffe Gardens, Teignmouth.
	Under	Under	Under	Under	Under, good	Under	Average	Average; good	Under	P. C. M. Veitch, Royal Nurseries, Exeter.
	Under; bad	Under; bad	Average; good	Over; good	Average; good	Average, good	Average; good	Average; good	Average; good	E. E. Bristow, Castle Hill Gardens, Filleigh, South Molton.
GLOUCESTERSHIRE	Under; good	Under, good	... ..	Average, good	Average, good	Average; good	Over, very good	Over; very good	Average; good	F. C. Walton, Stanley Park Gardens, Stroud.
	Under	Under	Under	Average	Average	Under	Average	Average	Average	W. H. Berry, Highnam Court Gardens
	Under	Under	Under	Under	Under	Under	Average	Average	Average	William Keen, Bowden Hall Gardens, near Gloucester.
	Under; bad	Under; bad	Under	Under	Under	Under	Average; good	Average; good	Average	John Banting, Tortworth Gardens, Falfield
	Under	Under	Under	Average	Under	Under	Average; good	Average, good	Under	Arthur Chapman, Westonbirt Gardens, Tetbury
	Under	Under	Under	Under	.....	.....	Under	Average	Under	Wm. J. Jefferies, Nurseries, Cirencester.
	Under	Under	Under	Under	Under	Under	Under	Average	.....	C. H. Hollingworth, Shire Hall.
HEREFORDSHIRE	Under	Under	Under	Under	..	Under	Under	Under	Under	Thos. Spencer, Goodrich Court Gardens, Ross.
	Under	Under	Under	Average	Under	Under	Average; good	Average	Average	George Mullins, Eastnor Castle Gardens, Ledbury.
	Under	Under	Under	.....	.. ...	.....	Under; good	Under, good	.....	H. E. Durham, Duncliu, Eign Hill.
MONMOUTHSHIRE	Under	Under	Under	Under	Under	Average	Average	Average	Under	Thos. Coomber, The Hendre Gardens, Monmouth.
SOMERSETSHIRE	Under	Under	Under	Under		.....	Average	Average	.....	J. T. Rushton, Barons Down Gardens, Dulverton.
	Under, bad	Under, bad	Under bad	Under; good	Average, good	Average; good	Average; very good	Average, very good	Under, good	George Shawley, Halswell Park Gardens, Bridgwater.
WORCESTERSHIRE	Under	Under	Under	Under	.. .	.....	Over; good	Average; very good	Under	Ernest Avery, Finstall Park Gardens, Bromsgrove.
	Under, bad	Under, good	Under	Under	Under	Under	Average	Under good	. .	John Masterson, Weston House Gardens, Shipston-on-Stour.
	Under; good	Under	Under	Under	Under	Under	Under	Under; good	... ..	F. Watkins, The Grange Gardens, Claines, near Worcester.
	Under; bad	Under, bad	Under, bad	Under bad	Over, very good	Over; very good	Average; good	Under, bad	Average; good	W. Crump, Madresfield Court Gardens, Malvern.
	Under	Under	Under	Under	.....	Under	Average	Average	Under	James Udale, 7, Ombersley Road, Droitwich.
	Under	Under	Under	Under	.....	Average	Average	Under	Average	C. A. Baylord, Davenham Gardens, Malvern.
WALES:										
CARDIGANSHIRE	Under	Under	Average; good	Average; good	Under	.....	Under; good	Over; very good	.....	Thomas Hazeldine, Crosswood Park Gardens, Aberystwyth.
CARNARVONSHIRE	Under; bad	Under	Under; good	Under; good	Under, bad	.....	Average; good	Average; good	.....	J. S. Higgins, Glynllivon Park Gardens, near Llanwnd .
DENBIGHSHIRE	Under	Under	Under	Under	Average	Average	Average	Average; good	Average	J. A. Jones, Chirk Castle Gardens, near Ruabon.
	Under	Under	Under	Under	Average	Average	Average	Average	Under	J. Martin, Bryn Estyn Gardens, Wrexham.
FLINTSHIRE	Under; bad	Under; bad	Under; bad	Over; good	.....	Average; good	Average; good	Average	Average	John Forsyth, Hawarden Castle Gardens.
	Under	Under	Under	Under	Under; good	Over; good	Under	Under	.....	James Barnard, Mostyn Hall Gardens, Mostyn.
GLAMORGANSHIRE	Under	Under	Under	Average; good	Under	.....	Average; good	Average; good	Average	C. T. Warmington, Penllergaer Gardens, Swansea.
PEMBROKESHIRE	Under; good	Under; good	Under; good	Over; good	Average; very good	.....	Over; good	Average; good	.....	Thomas H. Roberts, Slebech Park Gardens, Haverfordwest.
RADNORSHIRE	Under	Under	Under	Average	Under	Average	Average	Average	Average	J. MacCormack, Maesllwch Castle Gardens, Glasbury.
IRELAND:										
9 Ireland, N.										
DOWN	Average, good	Under; good	Average; good	Under	.....	.....	Average; good	Over; very good	Average	T. W. Bolas, Mount Stewart Gardens, Newtownards.
LEITRIM	Average	Under	Under	Average	.....	.. ..	Over; very good	Over; very good	.....	Duncan McGregor, Derrycarne House Gardens, Dromod.

CONDITION OF THE FRUIT CROPS—*(continued).*

COUNTY.	APPLES.	PEARS.	PLUMS.	CHERRIES.	PEACHES AND NECTARINES.	APRICOTS.	SMALL FRUITS.	STRAWBERRIES.	NUTS.	NAME AND ADDRESS.
6. Ireland, N.										
MAYO	Under; bad	Under; bad	Average; good	Average good	Average; good	.....	Over; very good	Average; good	Average; good	Richard Joyce, Westport House Gardens, Westport.
MEATH	Under	Under	Under	Under bad	.....	.....	Average good	Average very good	...	Michael McKeown, Johnstown, Drogheda.
	Under; good	Under	Average	Average; good	Average	Under	Over; good	Average good	Under	J. E. Pow, Dunsany Castle Gardens.
MONAGHAN	Under	Under	Under	.....	...	Average	...	Under		James Hepburn, Dartrey Castle Gardens.
TYRONE	Over; good	Under; good	Under	Average; good	.....	.....	Over	Average very good		Lord W. Walker, The Gardens, Stone House, Stone Mills.
WESTMEATH	Under	Under	Average	Average	Over	.....	Over; very good	Average; very good		Geo. Allen, Pakenham Hall Gardens, Castlepollard.
10. Ireland, S.										
CORK	Over	Under	Under	...	.....	.....	Average	Average	...	Per Secretary, Neville Gardens, Ballea.
	Under; bad	Under; bad	Under	...	...	...	Under	Under		M. Cotter, Ashton Gardens, Cobh.
	Under; good	Under; good	Under; good	...	...	...	Under; bad	Under; bad		E. Donnelly, St. Patrick's Terrace, Mogeely, Rosse.
KERRY	Under; good	Under; good	Under	Average good	Average	...	Average; very good	Under; good	...	Charles W. Bence-Jones, Myrtle Grove, Abbey Gardens, Killarney.
KILDARE	Under	Under	Under	Under	Over	Over	Over	Over	Under	Alex. Black, Carton, Maynooth.
	Under	Under	Average; good	Under	Average	Average; good	Under	Under; bad	...	Frederick Proctor, Straffan House Gardens, Straffan.
KING'S COUNTY	Under	Under	Under; bad	Under good	Under good	Under bad	Over; very good	Under good	Under bad	E. Clarke, Claremont, Garry Castle, Banagher.
LIMERICK	Under; good	Under; bad	Average good	Under good	.....	...	Over; very good	Average good	...	Harry Nixon, Roebuck Gardens, Kilmallock.
LONGFORD	Under; good	Under; bad	Under; bad	Under; bad	Average; good	...	Over	Average; good	...	J. A. Boyle, Castle Forbes Gardens, Newtown Forbes.
QUEEN'S COUNTY	Under good	Under good	Under good	Average good	Average	...	Over	Under bad	...	G. McGlashan, Abbey Leix Gardens, Abbey Leix.
ROSCOMMON	Under	Average; good	Under	Average; very good	Over	...	Average very good	Under	...	Joseph Reid, Frenchpark Gardens.
WATERFORD	Under bad	Under bad	Under bad	Average	Average	Over	Over	Under	Under	Mr. Chumbley, Curraghmore Gardens, Portlaw.
WICKLOW	Over; very good	Under bad	Under; bad	Average good	Average very good	Under bad	Average good	Under bad	...	Walter Bailey, Glenart Castle Gardens, Arklow.
CHANNEL ISLANDS:										
JERSEY	Under; bad	Under	Under	Under	Under good	Under	Average good	Under; good		Thomas Stanton, The Imperial Nursery, St. Mark's Road, St. Helier's.
ISLE OF MAN:										
DOUGLAS	Average; good	Under	Average	Under			Average	Under bad		James Inglis, Peel Road Nursery.

SUMMARIES OF THE HARDY FRUIT CROPS.

SCOTLAND.

Records	Apples.	Pears.	Plums.	Cherries.	Peaches, Nectarines, Apricots.	Small Fruits.	Strawberries.	Nuts.
Number of Records	670	(67)	(68)	(68)	(10)	(17)	(70)	(70)	(4)
Average	10	4	7	17	7	7	99	13	1
Over	5	1	1	2	1	3	8	6	
Under	26	32	27	15	7	6	18	8	3

IRELAND.

Records	Apples.	Pears.	Plums.	Cherries.	Peaches, Nectarines, Apricots.	Small Fruits.	Strawberries.	Nuts.
Number of Records	(21)	(21)	(21)	(14)	(12)	(6)	(21)	(21)	(6)
Average	7	1	6	10	6	1	7	8	1
Over	3			2	2	1	11	3	
Under	16	20	15	7	4	4	3	10	1

ENGLAND.

Records	Apples.	Pears.	Plums.	Cherries.	Peaches, Nectarines, Apricots.	Small Fruits.	Strawberries.	Nuts.
Number of Records	(183)	(160)	(157)	(153)	(121)	(121)	(163)	(161)	(16)
Average	9	—	6	31	69	39	111	70	15
Over	—	—	1	1	9	16	16	14	2
Under	154	150	150	118	52	66	33	63	54

CHANNEL ISLANDS.

Records	Apples.	Pears.	Plums.	Cherries.	Peaches, Nectarines, Apricots.	Small Fruits.	Strawberries.	Nuts.
Number of Records	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	
Average							1		
Over				—	—				
Under	1	1	1	1	1	1		1	

WALES.

Records	Apples.	Pears.	Plums.	Cherries.	Peaches, Nectarines, Apricots.	Small Fruits.	Strawberries.	Nuts.
Number of Records	(9)	(9)	(9)	(9)	(8)	(5)	(9)	(9)	(5)
Average	2	—	1	3	—	1	6	7	4
Over	—	—	—	2	—	1	1	1	
Under	3	4	5	4	5	—	2	1	1

ISLE OF MAN.

Records	Apples.	Pears.	Plums.	Cherries.	Peaches, Nectarines, Apricots.	Small Fruits.	Strawberries.	Nuts.
Number of Records	(1)	(1)	(1)	(1)			(1)	(1)
Average	1		1				1	—
Over			—	—				
Under		1	—	1			—	1

GRAND SUMMARY, 1918.

	Apples.	Pears.	Plums.	Cherries.	Peaches, Nectarines, Apricots.	Small Fruits.	Strawberries.	Nuts.
Number of Records	(231)	(229)	(227)	(219)	(158)	(150)	(231)	(232)	(122)
Average	22	7	21	61	77	49	153	125	54
Over	6	2	5	5	15	21	86	23	7
Under	206	222	201	150	66	80	45	84	61

SUMMARY OF 1917 FOR COMPARISON.

	Apples.	Pears.	Plums.	Cherries.	Peaches, Nectarines, Apricots.	Small Fruits.	Strawberries.	Nuts.
Number of Records	(229)	(258)	(257)	(216)	(151)	(158)	(258)	(256)	(114)
Average	147	120	105	144	78	66	199	143	76
Over	68	70	58	53	86	14	14	17	18
Under	14	62	94	19	17	80	6	81	31

EDITORIAL NOTICE.

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

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

Special Notice to Correspondents.—*The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.*

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

Letters for Publication, *as well as specimens of plants for naming, should be addressed to the* EDITORS, 41, Wellington Street, Covent Garden, London. *Communications should be* WRITTEN ON ONE SIDE ONLY OF THE PAPER, *sent as early in the week as possible, and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.*

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

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 62.19.

ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, *Thursday*, August 1, 10 a.m. Bar. 30; temp. 68°. Weather—Sunshine.

Failure of the Fruit Crops.

The tabulated returns on the condition of the hardy fruit crops furnished by correspondents in different parts of Great Britain and Ireland, which we publish in the present issue, show that the outdoor fruit crops of 1918 are amongst the worst on record.

That the fruit yields this season were bad was already common knowledge, but we doubt if anyone expected such dismal failures as our figures show. The deficiency is especially serious in the case of the principal crops—Apples, Pears, Plums, and Cherries.

Concerning Apples, there are 234 returns, and of these no fewer than 206 of our correspondents report a crop under the average, whilst only 6 have a yield of more than the average. Pears are even worse, for of a total of 229 returns, 222 give under crops, with only 2 over and 5 an average yield. The Plum crop is also an exceptionally poor one, for whilst 21 report a crop of average quantity, no fewer than 201 correspondents record a yield below the normal. Cherries and Apricots are almost as unsatisfactory: of 219 returns in the table for Cherries, it will be seen that 150 show a deficiency; whilst of Apricots, out of a total of 150 returns there are 80 failures.

Peaches and Nectarines, which are not of such utilitarian value as the other fruits mentioned, show a return almost equally divided between under and average crops, so that with a balance of 15 over there is not such great cause for disappointment in respect to these. Small fruits, amongst which are included Currants, Raspberries, and Gooseberries, are more satisfactory, and those who study our tables carefully year after year will know that this section of the hardy fruit crops is the most reliable of all.

But even with these there is nothing exceptional to report, for of a total of 234 returns 45 under crops are given; whilst of Strawberries the deficiency is even greater, more than a third of the number of correspondents—84 out of 232—having an under crop of these fruits. The returns with respect to Nuts are almost equally balanced between good and bad, there being 54 returns of average yield and 61 below.

Most of our correspondents have contributed these reports for several years, and have been accustomed to make accurate observations over a number of seasons, so that their statements may be taken as an accurate summary of the conditions. The present scarcity and general high prices of all kinds of fruits have caused the public to realise, as never before, the importance of the home fruit crops. In normal times a deficiency causes nothing more serious than a rise in prices, but at the present time fruits are practically unobtainable by those who do not cultivate them, and, we fear, in many cases, even by those who do. As we may expect that imports will be restricted for some years, even though the war should cease soon, there is every reason to anticipate that home-grown fruits will be in high demand for the next season or two, and efforts should be made to increase the home yield. Certain kinds of fruits give speedy returns, whilst even Apples, Pears, and Plums may be expected to furnish moderate crops the following season if suitable trees are selected and planted early in the autumn, to become well established by the time winter arrives. The Raspberry is, perhaps, the most reliable of all our common fruits for giving satisfactory returns the year after planting; and as the canes may be purchased cheaply, special plantations should be made as a war measure, and every alternate plant cut down to a foot from the ground level to supply strong suckers to enable the plants to carry on the following season, leaving the others to furnish a crop. Cottagers and allotment holders would be well advised to utilise their home gardens for these and other small fruits. If Strawberry runners are suitably prepared they will give a return when one year old; and even better for the purpose are pot plants that have been forced, provided they are given care and attention subsequently. Such bush fruits as Gooseberries and Currants are very profitable in a short period from planting, and the fullest use should also be made of these. Of all fruits few are more remunerative than the Morello Cherry, which may be described as a perpetual bearer. Even in this untoward season Morello Cherry trees have given a fair crop of extra fine fruits.

Turning to the causes that are responsible for the failure, they appear to be the exhaustion of the trees last season through bounteous cropping and the unfavourable weather of April this spring, following a March of unusual warmth. The autumn of last season was not favourable to the ripening of the wood of the current season, and it is probable that with the undue strain of prolific crops the trees were unable to form flower buds of sufficient strength to develop fruits. Several correspondents earlier in the season pointed to the deficiency of Pear bloom, some recording a total absence of flowers. Apples flowered fairly well, but the blooms lacked substance, and were unable to withstand the trying weather when they were expanded. The failure of the Plum crop is a greater mystery, for there was promise of a bountiful crop early in the season. The trees blossomed earlier than usual, favoured by a March of exceptionally warm weather, but April followed with cold nights and hot sun by day. Added to these was a cold, drying wind from the north and north-east, and the blossoms dropped wholesale, with the result that the Plum crop is one of the most unsatisfactory of all. Some are inclined to attribute the failure partly to the absence of bees, but we do not think this question of insect pollination has such a bearing on a good or bad fruit year as many believe. The wind is a greater agency in the distribution of pollen than many are disposed to believe, and there are many self-fertile varieties amongst not only Plums, but others of our hardy fruits.

The prevalence of insect pests this season is noted by several correspondents, and we fear that this is due, in a large measure, to the absence of the necessary labour for spraying.

A NEW POMOLOGICAL WORK.—The Pomological Society of France has decided to publish, in monthly instalments, the valuable descriptive work of M. DE LA BASTIE, on Pears and Apples as a supplement to the Society's Journal. M. DE LA BASTIE was for many years President of the Pomological Society, and his collection of fruits at Belvey was well known to all who followed French Pomology. His valuable notes were given at his death to the Society, and will now become available for its members. The subscription for the Journal and the special supplement will be 12 francs. Those interested should write to the President of the Society, 9, Rue Constantine, Lyon, France.

CURE FOR THE POISONOUS EFFECTS OF THE POISON IVY.—Some people can handle Rhus Toxicodendron, the Poison Ivy, with impunity, but others suffer from severe skin irritation if touched by a leaf. To those who are not immune it will be of interest to learn, on the authority of *The Florists' Exchange*, that a cure may be effected by applying carbolic acid (95 per cent.) and iodine, mixed in equal parts, to the affected part, after outlining this area with oil. This cure is said to take effect in three days, but it is not recommended for use where the poisoned portion is very large or where there are numerous poisoned areas on the body. When the itching so characteristic of this poisoning is intolerable, relief may be obtained by the application of water just as hot as the patient can bear it. If very hot water can be borne the relief from pain will continue for at least four hours. Moreover, the hot water absorbs some of the poison, thus preventing the spread of the trouble and hastening the cure.

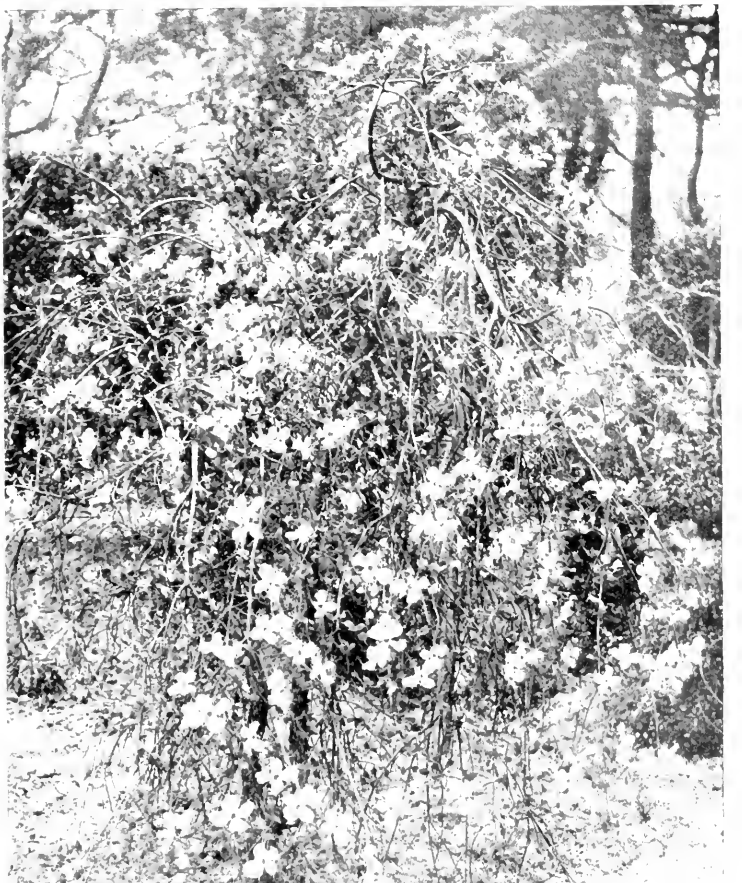
Certificates of Merit for Food Production.—Through the agency of the County and District Horticultural Committees the Horticultural Section of the Food Production Department is prepared to grant certificates to local Horticultural Societies and Allotment Holders' Associations, such certificates to be awarded for special skill in the cultivation of allotments and gardens, and for meritorious collections and single dishes of fruits and vegetables. Secretaries of local societies should apply to their district Horticultural Committees for these certificates.

New Director-General of Food Production.—The President of the Board of Agriculture and Fisheries has appointed Sir Charles W. Fielding, K.B.E., Director General of Food Production, in succession to Lord Lee of Fareham. Sir Charles Fielding has for years past taken an active part in the movement for the increased home production of food. He was a member of the Committee appointed by Lord Selborne to consider and report what steps should be taken by legislation or otherwise for the sole purpose of maintaining, and, if possible, increasing the present production of food in England and Wales, on the assumption that the war may be prolonged beyond the harvest of 1919. Sir Charles, who is an engineer by profession, has had charge, under the Ministry of Munitions, of the supplies of coal, the fixing for the moment of the price of explosives, and the supplies of the Army. He is now Chairman of the Materials and Machinery Committee of the Ministry.

Shading for Glasshouses. A first-rate whitewash which does not peel may be made by dissolving 2 lbs. of size in 7 gallons of water, and when all is dissolved adding to it 1 lb. of bichromate of potash, also dissolved in a pint of hot water. Stir the mixture well, and then add sufficient whiting to bring it up to the consistency of thick cream. Apply with a brush in the ordinary manner as quickly as possible. The mixture dries on in a very short time, and by the action of light becomes converted into a perfectly insoluble compound, a substance which does not wash off even with hot water, and at the same time does not give rise to moss growth, as whitewash made with size often does. It may be coloured to any desired shade by the use of a trace of any aniline dye. Another useful shading material is made as follows. Take one pound of flour, and keep just covered by the water while making. Strain through coarse cloth. Add 4 quarts of fine salt dissolved in warm water, 1 lb. of ricemeal boiled in water to a thin paste, ½ lb. of whiting, and ½ lb. of zinc dissolved in warm water. Mix all thoroughly and allow the mixture to stand covered for two or three days, stirring occasionally. Heat the whole before using.—*Queensland Agricultural Journal.*

Scarcity of Castor Oil. The fact that castor oil does not freeze under low temperatures has been turned to good account in the aeroplane industry, which had need of a lubricant that would not solidify in the low temperature of high altitudes. As the demand has increased with the great expansion of the aeroplane industry, the oil has become very scarce and dear for other purposes. Hitherto India has been the chief source of supply, and has exported about two million gallons of oil annually. In the Western United States 100,000 odd tons of acres have been placed under crops of Ricinus, for oil production, while in Jamaica and other West Indian islands the possibilities of castor oil production have been brought to the notice of cultivators. At present prices the crop may prove a paying one in districts where, under pre-war conditions, it would have been an economic failure. It must be remembered that where the oil is extracted locally the residue may be of value as a fertiliser.

Cornus florida pendula.—Although this beautiful small tree or shrub cannot on the whole be described as an unqualified success in all parts of this country, the illustration of the plant in fig. 17 shows that there are places where it thrives exceedingly well. In several Surrey and Sussex gardens, especially where the situation is somewhat elevated, the cultivation of Cornus florida and its varieties gives no difficulty. We know from the way it succeeds in the Eastern states of North America, even as far to the north as Boston, Mass., that the tree is very hardy, but there the division between winter and spring is scarcely defined. In many gardens in Britain this Cornus is excited into growth too early, and the crop of flowers is ruined by frosts that occur after. A position sheltered from the north and east is no doubt best suited for it, other trees may be fairly excluded from the sun. The late Mr. Chambers, of Haverstock Hill, had a specimen of this Cornus florida pendula which was about 30 feet above sea level, and he used to recommend for this Cornus cool, damp situation exposed to full sunshine. Cornus florida is a native of the Eastern United States from Massachusetts to the extreme south. It reaches even the mountains of Northern Mexico. According to Prof. Sargent, it is sometimes in this country 40 feet high. With us it rarely exceeds more than 15 feet in height. What is commonly termed the "flower" is really a coloured involucre of four bracts that surrounds the small and obscure true flowers—plainly seen in the illustration. The "flower" is 3 to 4 inches across, white in the typical form and in the pendulous variety illustrated, but bright rosy red in the var. rubra. When seen at their best, which is in late May, they are two more beautiful shrubs than these. Two other species with similarly showy involucres are grown in this country: C. Nuttallii, from the Pacific Coast, with bracts even larger than those of C. florida, and creamy white flowers; and C. Kousa, from Japan, with narrower bracts, flowering in July (both these seem to be of a hardier character than florida;



(Photograph by E. J. Wallis.

Fig. 17.—CORNUS FLORIDA PENDULA.

New Secretary of the Horticultural Club.—At the committee meeting of the Horticultural Club, held on Tuesday, July 30, Mr. G. F. Tinley, Managing Editor of *The Gardeners' Chronicle*, was appointed Hon. Sec. to the Club, in succession to the late Mr. B. Hooper Pearson, who had held the office since 1911.

ON INCREASED FOOD PRODUCTION.

WINTER GREENS.

Kales, Savoys, Coleworts, and other winter and spring greenstuffs should be planted now on ground rendered vacant by the removal of early Potatos and Peas and also where there is sufficient room between growing crops of Potatos, Peas and Beans. If rows of Peas have been grown 3 or 10 feet apart, and catch-crops of Turnips, Lettuce, and Early Potatos grown between them, these will be ideal positions for Winter Greens, as the partial shade provided by the Peas will protect the newly planted crops from hot sunshine. A space of 2 feet between each plant should be allowed, and 2 feet 6 inches between the rows. Plant firmly and deeply—put in the plants up to the seed-leaf—and leave a slight depression in the ground to secure full advantage from watering.

Clear away the surrounding crops as soon as they are finished, and hoe the ground thoroughly. As the plants gain size and strength they should be earthed up in the same manner as Potatos, and some of the taller-growing Kales must be staked and tied to prevent damage from wind storms. This precaution not only adds to their good appearance but increases the yield. If plenty of room is allowed the plants will make firm growth, which enables them to stand severe weather during the winter. Scotch Kales should be given the best and most sheltered positions, as they are taller growers than the other sorts. The Russian and Cottager's Kales and Purple sprouting Broccoli are very hardy, especially the Kales, and these may be planted in the less favourable places. Plant Savoys by themselves, as, by reason of their spreading habit of growth, they are not suitable for planting between other crops. Dwarf Green Curled and Early Ulm are excellent varieties for autumn use, and Large Green and Ormskirk for later supplies. Cartercome, a new variety, I have grown for two seasons, and it is excellent, the flavour being all that could be desired. Another good vegetable for winter use is Christmas Drumhead Cabbage. Hardy Green or Rosette Colewort are very hardy. They often prove most useful as a catch crop, and no amount of frost seems to damage them.

All the varieties and kinds of Winter Greens I have mentioned should be well earthed up before the approach of hard weather, as this protects the stems from frost and keeps them steady during rough weather. It is a mistake to plant too early, as this induces excessive growth, which may not stand severe weather. Strong, medium-sized plants will stand extremes of weather much better than large, overgrown specimens. *R. W. Thatcher, Carlton Park Gardens, Market Harborough.*

PEAS AND DRY WEATHER.

Early Pea crops have been of short duration on our dry Surrey soil, but this is not due entirely to the drought. There was a time in early June when the cold nights retarded growth. The night of June 25 was colder by 11 degrees than the night of January 25, consequently there was a severe check. We gathered pods of World's Record on June 21, a week later than last year. This variety ripens and comes to maturity faster than any other Pea I know. Little Marvel and Pioneer, sown in pots, grew well until the exceptionally cold nights came when they refused to move; these two varieties do well on light soils.

Reading Giant and Early Morn have been very good, and so has Imperial Dwarf, a fine, strong-growing Pea with large and well-filled pods. International has been splendid. Harvestman is another fine Pea. Alderman and Duke of Albany promise well, and have withstood the drought splendidly. Autocrat is also looking remarkably well. These three last are in rows about 120 feet long and about 6 yards apart, with Potatos partly shading their roots on either side, and on newly trenched ground.

The later-sown Peas germinated badly, but since the rain came they have improved, and now look extremely well. I have found this season that unsupported dwarf Peas were better in every way than those supported by sticks; I believe the haulm shaded the roots and enabled the plants to withstand the drought better than those which were staked. I have gathered good dishes of Michaelmas and Late Queen Peas on Lord Mayor's Day, but a genial season is needed to procure good Peas at that late date. *W. A Cook, Abbots Wood, Godalming.*

HOME CORRESPONDENCE.

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

Apples at Wisley.—It is interesting to know that Apples are not a failure everywhere this year. Trees in the collection on the high ground above the Laboratory in the gardens of the Royal Horticultural Society at Wisley are laden with fruit. The trees have been saved from the winter moth by grease banding and by spraying with arsenate of lead. At the time of my visit the ground was very hard, as the cultivator had not been at work for want of labour, and the bush trees were casting quantities of fruit, which really requires thinning. Irish Peach and Cornish Gilliflower are fruiting on the tips of the shoots as usual. The former is notable for its high colour at present, though that is scanty at maturity; and much the same may be said of Cellini. Fruits of Colonel Vaughan are almost green, though they develop a deep red colour in autumn. True to its character, Lane's Prince Albert squats right to the ground, though grown as a bush. Other varieties also fruiting heavily are Frogmore Prolific, Bramley's Seedling, Duchess's Favourite, Duchess of Oldenburg, King of the Pippins, Golden Spire, Ecklinville Seedling, Lady Sudeley, Dumelow and many others. Cox's Orange Pippin and King of Tompkins County are good, the latter having large fruits, evenly distributed over the tree. *J. F.*

Fruit for a Royal Banquet in 1607.—My sons, who are Freemen of the Merchant Taylors' Company, were the cause of my recently acquiring a bulky volume entitled *Memorials of the Guild of Merchant Taylors, etc.* In it are the accounts in detail of the cost of a banquet given by the Company to King James I. and Prince Henry, in the year 1607. The items occupy about 19 pages, and comprise everything in connection with the feast: fish, eggs, fuel, linen, beer, butter, bread, wine, grocery, fruit, etc. It struck me that some of the readers of the *Gardeners' Chronicle* who are of an antiquarian turn of mind might be interested in the names and prices of the fruit that was then placed upon the table. They are as follow:—For 3 syves of Cherries and 20 lbs. more at 5d., £1 15s. 6d. For Strawberies for the King's cookes, 2s. For 3 gallons of Gooseberies, 3s. For a gallon and half of Raspices, 5s. For certen seedes for the cookes, 1s 10d. For 2 hamper of Quodlings, 12s. For a hamper of Pyppyns, 6s. For Goosecheries, Peaches, and Cheries, wth. portage, 7s. For greene fruite, Peares, Apples, and Damsyns, £1 4s. 6d. For fower score greate Lemans at 8d., £2 13s. 4d. For fower score midle Lemans at 4d., £1 6s. 8d. For 150 grete Orenges at 4d. the peece, £2 8s. For 250 midle Orenges at 1d. the peece, £1. For 60 lbs. of Potatoes at 10d. the pounde, £2 10s. For 136 Quinces at 4d. the peece, £2 3s. For 40 largess Quinces to Mr. Wallis at 6d., £1. For flyfty large Quinces to him at 6d., £1 5s. For 10 dozen of Artechoks at 5s. the dozen, £2 10s. For 6 gallons of Gooseberies at 16d. the gallon, 8s. For 3 quarts of Redd Currens, 3s. For Parsly 6s., Lettis 5s., and Purslane, 2s., 13s. For Spynnage 3s., smale sallett 2s. 6d., 5s. 6d. For corne sallett 2s., Tarragon and Rockett 12d., 3s. For flowers of all sorts 6s., Rosemary and Bayes, 5s., 11s. For Burredge and Burnet 12d., Carrets and Turneps 3s., 4s. For sweetherbes of all sorts 3s., Onyons and herbs 12d., 4s. For Sorrell and Fennell 18d., for Reddishes 6d., 2s. For hartechoke suckers, 1s. Further on there are lists of other fruits, fresh and candied, such as Plums of Arabia, Venis Dat Plums, Pruons of Genoa, greene Dates, dried Pedrogots, Plums of Marcelis, Peares of Roun, Pruons Brembe, Apples of Damasco, Frayses of Genoa, Madere Citrons, Suckett Peares, Canded Cioues, Canded Eringas, Canded Gilliflowers, Vagasses of Genoa, Dry Plumes, Pruons of Brunello, etc., etc. The feast, with its incidental expenditure, appears to have cost £1,061 5s. 1d.—a considerable sum considering the value of money over three centuries ago. *C. H. P.*

American Blight.—If his short list of varieties of Apples that are liable to attacks of woolly aphis is complete, then Mr. Brotherston must be more fortunate than most of us, for I am sure the list could be greatly extended by a general canvass. The variety which, in my experience, suffers most, is Cox's Orange Pippin, and I have seen American blight on many other sorts. A week or two ago I saw a young standard John Downie Crab literally smothered with the pest. The woolly aphides were even festooned around this season's shoots. This points to a decided contradiction of the widely-spread impression that the blight is purely a wound parasite, and I am sure many other instances of attacks on young growth could be cited. The Crab is growing in a shrubbery a goodly distance from any fruit trees, so the conclusion I drew was that the aphis came with the tree when it was purchased three years ago. In its out-of-the-way position the insects increased unnoticed, and in all probability many other Crabs are infected. That valuable work, *The Book of Garden Pests*, mentions American blight as one of the insect enemies of the Pear; no particular varieties are named, and it is probable that, as with Apples, it is indifferent to such trifles. *A. C. Bartlett.*

Fuel for Glasshouses.—The leading article in your issue for July 6 was most timely and to the point, and will afford valuable assistance to horticulturists both in private establishments and public gardens. Valuable collections of plants, often the result of many decades of untiring effort, should be saved from destruction. It is possible to reduce the number of these in nearly every instance and devote the room, as you state, to food production. No glass structure of any kind whatever should be allowed to remain empty. Two crops, e.g., Potatos and Tomatos, can often be grown in the same season in houses that are but moderately heated. The statement that a smaller amount of firing will in the end be beneficial to fruit trees in houses, with, as a matter of course, less forcing, is to the point. At Gunnersbury House Gardens we have practically ceased the early forcing of either vines, Figs, or stone fruits of any kind. In consequence of the rest the vines have greatly improved in vigour, and our pot fruit trees never cropped better, on the whole, than this year. It is most timely advice to have the hot-water installations overhauled and the furnaces, etc., put into proper order. This attention in itself will result in a saving of fuel. In times long past I had the management of the stokehole, and was expected to keep up the required temperatures with wet, sappy roots, slack coal, and cinders: anthracite coal and ordinary coal were only provided in the coldest of weather. Waste results in not keeping the fires well damped down and checked on warm days. By a careful use of rough wood a considerable saving of other fuel may be effected. I have used timber, and none too dry either, in conjunction with the refuse from the cinder heap when flues were still in use in old-fashioned greenhouses, and we grew good specimen plants. There is not any saving whatever, but the reverse, in attempting to make one boiler do the work of two. Two medium-sized boilers are infinitely better in one stokehole than one large one, and it is always best to have boilers set in duplicate. If I run short of fuel during this coming winter I have a supply of Elm logs blown from our trees during the severe storm early in 1916. When the weather is not fit for outside work it will be possible to prepare some of this timber for the stokehole during the late autumn. *Jas. Hudson, Gunnersbury House Gardens, Acton.*

The Week's Work.

THE KITCHEN GARDEN.

By F. Jordan, Gardener to Lieut.-Col. Spender Clay, M.P., Ford Manor, Lingfield, Surrey

Potatos.—A long spell of wet, close weather at this time of the year is invariably conducive to the spread of the late blight disease. Last year in some gardens whole breadths of Potatos were diseased as early as the middle of July up to the present I have found no disease in our comparatively large, open quarters, but increased warmth will be favourable to the spread of the disease during the next few days. Let the weather be what it may, the more delicate early varieties are almost certain to be affected soon. If the foliage is only slightly diseased and but few of the uppermost tubers affected, then all may be lifted and stored with advantage. When a diseased crop is lifted and stored early, many tubers slightly affected escape notice, and unless the crop is most carefully examined, many decaying tubers will be found after the heap has been stored for some time. Potatos that are still growing vigorously should be left undisturbed for some time longer, as the only cause for anxiety now is the unsettled condition of the weather. All diseased foliage should at once be collected and burnt.

Ridge Cucumbers. The hot, sunny weather of June favoured a strong, early growth of out-of-doors Cucumbers, which, under various systems of culture, are especially productive. It is very unwise to leave a few fruits to attain a large size, as these are of little value and greatly impair the fruit-bearing habit of the plants. Keep the plants well supplied with water, and give them an occasional application of liquid manure.

Vegetable Marrows.—Marrow plants are producing fine crops this year, the season being warm. Marrows rooting in a mass of rich manure are growing too rapidly, and are by no means so productive as those put out on well-manured open ground or on slightly raised beds with only a limited quantity of manure. Stopping the growths in the case of buxom plants will not increase their productiveness much; they are likely to be more fruitful when the growths are allowed to ramble thinly and not trained. Large fruits are not favoured for the table, but later in the season they will be of considerable value for jam-making.

French Beans.—From a small sowing of French Beans made in a cold pit at this date last year we could pick a good dish almost every day until severe frosts occurred in the autumn. Lights should be placed over the frames when heavy rains fall in October, but they should be tilted to permit of a free circulation of air in the frame. Few other plants are more easily damaged by slight frosts or cold east winds than the French Bean. Sow a few seeds in pots towards the end of the present month, and grow the plants in cool conditions, to be brought forward under glass in pits and cleared in readiness for them.

FRUITS UNDER GLASS.

By W. J. Guise, Gardener to Mrs. Dempster, Keele Hall, Newcastle, Staffordshire

The Vinery.—No fruit improves so much by hanging as the Grape, and to keep the bunches in a fresh, plump condition the house should be freely ventilated day and night. The essential point is a cool and fairly dry atmosphere, with a continuous current of air under the bunches. This treatment not only improves the fruit, but is also necessary for the ripening of the wood, which should be brown and hard, with plump buds, before the autumn. It is advisable to maintain a little warmth in the water-pipes during cold, wet weather to prevent condensation of moisture on the berries. Examine the bunches and remove defective berries forthwith. Outside borders with soil of a retentive nature would be much better covered with galvanised iron sheets or some other suitable material to ward off heavy rains.

Muscat Vinery.—Muscat of Alexandria Grapes are colouring, and from now onwards very careful attention to details is necessary if the bunches are to finish well. Some growers entirely dispense with fire-heat at the ripening period with excellent results, but in cooler districts, or during a spell of cold, wet weather, it is advisable to employ a little artificial warmth. A few bunches of Muscats need a warm, drying temperature to finish well. If a little air is admitted by the top ventilators through the night, there will be no danger of the berries scalding. Sulphatarea should be continually kept in use, as Mus at Grapes need plenty of light and air, and the removal of many superfluous growths at one time would give a check to the Vine. Should red spider be detected take steps to exterminate the pest by spraying the rafters with clear soapy water to which a little sulphide has been added.

PLANTS UNDER GLASS.

By E. Hobbiss, Gardener to Lady Wantage, Lockinge Park, Berkshire.

Perpetual Carnations.—Young plants of Perpetual-flowering Carnations should be staked, when they need supporting, with green Bamboos. Do not crowd the young growths, and arrange the plants so that plenty of light reaches them in every part; overcrowding is one of the chief causes of "rust." Some of the younger plants will soon be well rooted and may be given a little stimulant. For the first week or two weaken soot water with about two parts of water, and this fertiliser will impart a good colour to the foliage. If the plants are under glass of the sort, store be thrown wide open at all times, and excess of heat to be avoided. Lightly fumigate the house occasionally to keep the plants free from aphis. The foliage should also be sprayed with copper sulphate about once a fortnight as a preventive of rust disease.

Coleus.—To obtain fine colour in the leaves of Coleus expose the plants fully to the sun. The house must however be carefully ventilated, or the leaves may become scorched. When the pots are full of roots do not allow them to suffer for want of moisture. Before being used in the conservatory or dwelling the plants should be gradually inured to cooler conditions, as a check caused by a sudden lowering of the temperature may cause them to lose some of their lower leaves.

Violets.—These plants should be attended to once a week for the purpose of removing runners. Keep the hoe at work between the plants, and, to promote healthy growth, give them an occasional dusting with well-seasoned soot. If there is the least evidence of red spider on the foliage an effort should be made to destroy the pest before the end of the season.

THE ORCHID HOUSES.

By J. Collier, Gardener to Sir Jeremiah Colman, Bart., Gatton Park, Reigate.

Cattleya and Allied Genera.—Cattleyas, Laelias, and the numerous hybrids of these Orchids that have recently passed their flowering stage, should be kept slightly on the dry side until new top growth and new roots are produced. Also any necessary repotting must be done. For small pots. The pseudo-bulbs of many of the plants will shrivel after root disturbance, and such plants should be watched with extra care. It is best to simply spray over overhead two or three times each day, and keep their surroundings moist by frequently syringing between the pots. It is not a good practice to saturate newly potted plants with a view to inducing the pseudo-bulbs to retain their plumpness during the time the soil is wet the old roots will gradually decay, neither will the young roots thrive in a saturated material. Such Cattleyas as C. Dowiana and its variety aurea, C. Warscewiczii (syn. gigas) and its variety Sanderiana, and the hybrid Hardiana, are maturing their flowering growths and should be grown in the warmer end of the Cattleya house near the roof glass. Keep them just moist. When the flowers are over, and roots are active in the bases of the new pseudo-bulbs, the plants may be repotted. When the pseudo-bulbs are fully developed the plants should be rested, and may be suspended from the roof rafters in the coolest part of the Cattleya house. Plants that are not to be potted should be encouraged to accelerate their growth by placing them nearer the light, or where they will be exposed to the sun's rays and heat. Endeavour to prevent them from making soft new growths, and induce them to take a full rest, as many autumn flowering Cattleyas start up to make second growth immediately the first growth has reached maturity. This is frequently a cause of the plants failing to flower, or remaining soft and sappy when growth is completed.

Cattleya labiata.—The Cattleya makes its growth during summer, and flowers in autumn; already the flower buds are formed. It is only safe at this season to expose the plants elevated near the roof glass on condition that they may receive plenty of sunheat to enable them to consolidate their growths. As soon as flowers are matured, and the flowers are commencing to push through the sheaths, reduce the water supply at the roots considerably, as these plants are impatient of an over-supply of moisture at the roots at this particular season, this being often the cause of decay in the new pseudo-bulbs. A Cattleya should be kept under close observation; insect pests to which they are subject most frequently make their appearance as the new growths develop, and soon cause injury and permanent disfigurement. Small scale insects should be removed as soon as they can be detected, as minute white specks on the leaves and shoots. Thrips should be destroyed by regular syringings and vaporisings.

THE HARDY FRUIT GARDEN.

By Jas. Hudson, Head Gardener at Gunnersbury House, Acton, W.

Late-Fruiting Raspberries and Currants.—Early in August I make it a practice to examine the stock of autumn fruiting Raspberries and thin out all plants that are not showing for fruiting. When this is done a few upright stakes are fixed over the rows and Bamboo rods are tied to these horizontally. This makes a sufficiently secure support to which to tie the fruiting shoots. After this a slender piece of cane is fixed to the shoot near its apex, and it is then tied by an upward pull to the cross Bamboo. Trained in this way the weight of the fruit later does not cause the shoot to arch over. By this system all the light possible reaches the plants and it is an easy matter to see when the fruits are ripe for picking. Late Raspberries will be most useful this autumn, both for dessert and culinary use, as well as for preserving. Netting will, as a matter of course, be placed over the plants, as birds are particularly fond of the fruits. Keep the surface soil free by hoeing, and remove all late suckers. If late varieties of Red Currants are grown, the fruits are very useful in combination with late Raspberries. Both the late Red and White Currants should find a place on the dessert table this coming autumn. When bushes of these fine Currants are grown on north walls and well attended to a crop may be depended on well into the shooting season. Late Gooseberries are also most useful in the autumn for dessert. The berries keep well better perhaps, if the wall has a coping.

Late Cherries on Walls.—Where late Bigarreaus, such as Emperor Francis and Bigarreau Napoleon, succeed the fruits are most invaluable, and another good late fruiter is Géante d'Hedelfingen. These fruits do best on east walls. The Morello Cherry when thoroughly ripened is not to be despised for dessert purposes. Keep the trees securely netted and watch the fruit to see that none is decaying. Late attacks of black fly may prove troublesome but as the pest usually finds a lodgment on the ends of the shoots they may in most cases be easily removed. If this is not deemed expedient then resort to dipping the ends of the shoots in a strong insecticide.

SOCIETIES.

ROYAL HORTICULTURAL.

JULY 30.—There was no novelty of outstanding merit on this occasion; indeed, novelties and plants of special interest were few. The Floral Committee made no awards to new plants, but granted ten medals, including a Gold one to Messrs. ALEX. DICKSON AND SONS for a glorious exhibit of Roses. The Fruit and Vegetable Committee awarded two medals, and the Orchid Committee granted one First-class Certificate and two medals.

The Society's exhibition of Dry Bulbs was held on this date, and the competitors appeared to be the only enthusiastic people about, as there was a holiday-time air abroad and the day was close and sultry.

Floral Committee.

Present: Messrs. H. B. May (in the chair), E. A. Bowles, W. J. Bean, Sydney Morris, John Green, G. Reuthe, John Heal, W. A. Howe, J. F. McLeod, W. H. Page, J. T. Bennett-Poe, H. Cowley, W. B. Cranfield, J. W. Moorman, W. P. Thomson, E. F. Hazelton, Chas. Dixon, Chas. E. Pearson, Jas. Hudson, E. H. Jenkins, and George Paul.

INTERESTING PLANTS.

Messrs. BAKERS exhibited Gentiana lagodechiana, which is very like G. Freyniana, but appears to have whiter dots on the lobes of the flower, and also a more expanded bloom. Gaultheria nummularioides, a neat and pretty plant, was shown by Mr. G. REUTHE, who also exhibited Digitalis canariensis, Berberidopsis corallina, and flowering sprays of Phillyrea buxifolia and Feijoa Sellowiana. J. CHURCHER, Esq., Alverstoke, staged a little group of very elegant Gladioli, all hybrids from G. primulinus: the varieties Alice Tiplady, orange-apricot; Firefly, deep scarlet; Otranto, soft yellow; and Altair, rich salmon-pink, were especially charming. Messrs. ALEX DICKSON AND SONS' display of Roses thoroughly merited the Gold Medal awarded; the varieties "K of K," Col Oswald Fitzgerald, Mrs E. V. Haworth, Sunstar, Red letter Day, and Elizabeth Cullen, were all largely shown and effectively staged. In Mr JAMES DOUGLAS' group of Carnations the varieties Sweet Anne Page, Solfaterre, Edenside and Orange King were of outstanding merit.

GROUPS.

The following medals were awarded: *Gold* to Messrs. ALEX DICKSON AND SONS for Roses. *Silver-gilt Banksian* to Mr. L. R. RUSSELL for stove plants. *Silver Flora* to Mr. G. REUTHE for rare and interesting shrubs; to Mr. G. W. MILLER for hardy flowers. *Silver Banksian* to Messrs. J. CHEAL AND SONS for Astilbes and flowering shrubs; to Mr. JAMES DOUGLAS for border Carnations; to Messrs. H. B. MAY AND SONS for Ferns; to Rev. J. H. PEMBERTON for Roses. *Bronze Flora* to Messrs. WM. PAUL AND SON for Roses. *Bronze Banksian* to J. CHURCHER, Esq., for Gladioli.

Orchid Committee.

Present: Sir Jeremiah Colman, Bart. (in the chair), Sir Harry J. Veitch, Messrs. Jas. O'Brien (hon. secretary), W. Bolton, R. A. Rolfe, J. Wilson Potter, Pantia Ralli, Chas. H. Curtis, J. Charlesworth, E. R. Ashton, Walter Cobb, C. J. Lucas, R. Brooman-White, Frederick J. Hanbury and S. W. Flory.

AWARDS.

FIRST CLASS CERTIFICATE.

Laelio-Cattleya Britannia majestica (L.-C. Cunhaiana alba × C. Warscewiczii From H. Bygrave) from Messrs. CHARLESWORTH AND CO., Haywards Heath.—A grand hybrid, and probably the best white-petalled Laelio-Cattleya yet raised. The plant bore a spike of four very large and handsome flowers with snow white sepals and petals. The base of the lip is white with purple lines inside; the disc chrome-yellow, the broad front lobe rich Tyrian purple with a clearly defined white margin.

PRELIMINARY COMMENDATION

Odontoglossum Marne (ardentissimum Orchid-hurst var. × Colossus), from Messrs. ARMSTRONG AND BROWN, Orchidhurst, Tunbridge Wells.—A superb seedling of model shape flowering for the first time. The flower, broad in all its parts, and especially in the upper sepal and lip, had a white ground, the inner two-thirds densely blotched with deep violet, the markings of the lip matching those of the sepals and petals.

GROUPS.

Messrs CHARLESWORTH AND CO. were awarded a Silver Flora Medal for an effective group in the centre of which were varieties of the white-petalled Cattleya Hesta; with these were arranged other white petalled Cattleyas and Laelio-Cattleyas, Odontoglossums, Odontiodas and Miltonia Charlesworthii.

Messrs. STUART LOW AND CO., Jarvisbrook, Sussex, were awarded a Silver Flora Medal for a group of Cattleya Warscewiczii of a very fine type, the well-grown plants bearing spikes of from five to seven blooms each; Cattleya Dowiana, other Cattleyas, and a choice selection of Odontoglossums, were staged with them. The rare species Angraecum Scottianum and Oncidium candidum were also noted.

Dr. MIGUEL LACROZE, Brundr, Roehampton, sent Odontoglossum Cordoba (Doris × eximium), a charming pure white flower with an occasional violet spot on the sepals, the lip bearing a ray of the same colour; also Cattleya Hesta Brundr, of good shape, the clear white flowers having a marbling of purple on the front lobe.

Messrs. J. AND A. MCBEAN, Cooksbridge, staged a small group in which were Miltonia vexillaria Queen Alexandra, one of the largest white forms and of broad proportions; the white Dendrobium Dearei, Cattleya Dowiana, and a fine form of Odontoglossum crispum with occasional spots on the sepals.

Fruit and Vegetable Committee.

Present: Messrs. Joseph Cheal (in the chair), Owen Thomas, Edwin Beckett, A. Bullock, W. H. Divers, E. A. Bunyard, Geo. P. Berry, H. S. Rivers, and J. C. Allgrove.

A fairly extensive collection of vegetables and fruits was exhibited by R. L. MOND, Esq. (gr. Mr. C. Ball), Combe Bank, Sevenoaks. The vegetables were of good average quality and represented a large number of kinds and varieties, and the fruits consisted of half a dozen Melons, black and white Grapes, Cherries, Apples, Black and Red Currants, seven dishes of Gooseberries, Raspberries, Nectarines and Peaches. The exhibit was not well staged, owing, no doubt, to lack of time and labour, therefore the various items did not show to the best advantage. (Silver Knightian Medal.)

Messrs. DOBBIE AND CO. staged tubers of about a score of varieties of Potatos; the specimens were excellent, and well displayed in baskets. Exhibition Red Kidney, the result of a cross between Myatt's Ashleaf and Snowdrop, a very handsome Potato, was the most attractive variety, but Edzell Blue, Climax (pink), Witch Hill, Epicure and Midlothian Early were also well represented. (Silver-gilt Banksian Medal.)

Dry Bulb Show.

The Society's exhibition of dry, home-grown bulbs has now become an annual event. It is invariably interesting and provides ample opportunity for demonstrating how well bulbs, notably of Daffodils and Tulips, can be grown in the British Isles. On this occasion eight classes were provided, but there was no entry in either of the two open to amateurs nor in the open one for a collection of various kinds of bulbs. Although this exhibition was not so extensive as earlier ones, and was restricted to Daffodils and Tulips, the quality of the bulbs was splendid throughout.

The best collection of twenty varieties of home-grown Daffodils, twenty single bulbs of each, was staged by THE DONARD NURSERY CO.: the bulbs were clean, weighty, and of remarkably large size; indeed, the specimens of King Alfred were exceptionally large, while those of Outpost, Magog, Golden Spur, Lucifer, and Gloria Mundi were correspondingly fine; 2nd, Messrs. J. R. PEARSON AND SONS; 3rd, Messrs. R. H. BATH, LTD.

THE DONARD NURSERY CO. gained the 1st Prize for fifteen varieties of home-grown Daffodils, ten large "family or cluster" bulbs of each; here again the specimens were exceptionally good in size and weight, showing that Irish soil and climate, plus Irish skill in cultivation, can produce bulbs which the very best Dutch growers would find difficult to match and very hard to beat.

In the class for twenty single bulbs of ten varieties of home-grown Daffodils, competitors had to include examples of Emperor, Empress, Golden Spur, Sir Watkin, Barrii conspicuus, and ornatus; Mr. J. MALLENDER was awarded 1st Prize for fine setts of Victoria, Sir Watkin, and Weardale Perfection.

Mr. GEO. MONRO, Junr., was placed 1st for a collection of twenty bulbs, each of twenty varieties, of home-grown Early Tulips; this collection consisted of very clean, even-sized bulbs, solid and weighty, staged on cocoa-nut fibre refuse in low wicker baskets. Notably good were the examples of Keizerskroom, Cottage Maid, Yellow Prince, Jacoba van Beiren, Vuurbaak, and Pink Beauty; 2nd, Messrs. R. H. BATH, LTD.

Mr. GEO. MONRO, Junr., was also 1st Prize-winner in the class for twenty bulbs, each of twenty varieties, of home-grown May-flowering Tulips, and here again the quality and presentation of the bulbs left nothing to be desired; Prof. Rauwenhoff, Europe, La Tulipe Noire, Mr. Farncombe Sanders, Pride of Haarlem, Mrs. Moon and Calliope were unusually good; 2nd, THE DONARD NURSERY CO., with large but not such shapely bulbs, and every specimen looked as though it had been rubbed with an oiled rag, as each presented a very shiny appearance; 3rd, Messrs. J. R. PEARSON AND SONS, with large specimens; equal 4th, Mr. J. MALLENDER and Messrs. R. H. BATH, LTD.

MIDLAND CARNATION AND PICOTEE.

JULY 26 AND 27.—This Society's twenty-eighth annual exhibition, held at the Edgbaston Botanical Gardens, was larger and better than the one held a year ago, there being upwards of 200 entries, against about 100 in 1917. The schedule of prizes has been rearranged, and a handsome twenty-guinea Silver Challenge Cup given by the President, W. Walters Butler, Esq., and a Gold Medal given by W. A. Nevill, Esq., have been added to the list of special awards. The all-round quality of the flowers was high, and the vase of Rosy Morn which gained for Mr. T. M. Tranter the gold medal offered for the best vase in the show was very fine, the stout-petalled blooms being unusually large, of excellent form and colour, and, when sold, they realised 22s. 6d. for the benefit of the Red Cross fund. Altogether about £20 was raised by the sale of flowers and plants for this deserving Fund.

FLOWERS IN VASES (OPEN).

The coveted prize in the first ten classes was the new Silver Challenge Cup offered to the exhibitor gaining the highest number of points. After a very close contest a local amateur, Mr. T. M. TRANTER, managed to beat the well-known and highly successful Midland growers, Messrs. A. R. BROWN, LTD., by one point only. Mr. TRANTER won 1st prizes in classes for (1) a Rose or Pink Self, with Rosy Morn, previously referred to; (2) White, with bold, heavy specimens of Bookham White; (3) Scarlet, Red, or Cherry Self, with General French; (4) Yellow-ground Fancy, edged and marked type, like Lord Steyne and Linkman, with Lord Steyne; (5) White-ground Fancy, with Fair Ellen; and (6) White-ground Picotee, with Clementine. Messrs. A. R. BROWN, LTD., were awarded 1st prizes for (1) Buff, Yellow, Orange, or Terracotta, with exquisitely shaped flowers of Madame Apollonia; (2) Yellow-ground Fancy, suffused type, like Hercules, with John Holyoake; and Yellow-ground Picotee, with W. L. Hodgkinson, shown in good style. Mr. JAMES SMITH, Darvel, showed the best Maroon, Purple, or Heliotrope Self.

THE INVISIBLE CARD CLASS.

Lieut.-Colonel PERCY SMITH provided prizes for a new class called "the invisible card class." The flowers were shown in vases supported by invisible paper cards or collars. Formal dressing was considered bad staging, and splitting of the calyx a disqualification. Messrs. A. R. BROWN, LTD., Mr. T. M. TRANTER, and Mr. JAMES SMITH were placed in the order named, and included in Messrs. BROWN'S exhibit were

splendid flowers of Mrs. W. G. Gottwaltz, Brilliancy, Mrs. George Marshall, and Pasquin.

FIRST DIVISION.

Of the seven classes in this division Mr. R. G. RUDD, King's Heath, carried off five 1st prizes. In the first class, which was for nine vases, dissimilar, he had uncommonly good specimens of Exquisite, Centurion, Bob Acres, Lord Kitchener, Pasquin, and Sweetheart. His other successes included 1st prizes in the classes for Self Carnations, in which he showed lovely flowers of Bookham White, Tubal, and Mrs. Percy Smith; Yellow-ground Fancies, with Centurion, Linkman, and Sam Weller; White-ground Fancies, with The Bride, Lord Kitchener, and Kent Faulkner; also a single vase of Fancy Carnations other than white or yellow-ground. His blooms of Joseph Reeves were much admired. Messrs. A. R. BROWN, LTD., had the best three vases of Yellow-ground Picotees, and showed W. L. Hodgkinson, Dago, and Mrs. W. G. Gottwaltz. In the class for White-ground Picotees Messrs. A. R. BROWN, LTD., were placed 2nd to Mr. C. H. HERBERT, whose flowers of Silas Baldiston, Ganymede, and Fair Maiden were very choice.

FLOWERS ON STANDS.

Twelve Self Carnations.—1st, Mr. R. G. RUDD, with first rate blooms of Purity, Wyatt Peach Blossom (Premier), Bob Acres, Border Yellow, and Farthest North; 2nd, Mr. C. H. HERBERT, who had Fujiyama, Lilian, Farthest North, and W. H. Purton in fresh condition; 3rd, Messrs. A. R. BROWN, LTD.

Twelve Fancy Carnations.—Mr. RUDD was again to the fore with shapely flowers of Lord Steyne, Osprey, John Ridd, Bombardier, and Linkman. Mr. C. H. HERBERT'S 2nd prize stand contained the Premier bloom—Liberté.

Twelve Yellow-ground Picotees.—1st, Mr. C. H. HERBERT, whose best flowers were Exquisite, Romance (Premier), Gertrude, and F. W. Goodfellow. The same exhibitor excelled in a class for twelve Bizarre or Flake Carnations, showing Spendthrift (Premier), Gordon Lewis (Premier), Master Fred, Cleopatra, and Sportsman. Messrs. A. R. BROWN, LTD., who were placed 2nd in the last named class, took the lead in a class for twelve White-ground Picotees, in which Paula (Premier), Helen, Barnard, Nellian, and Fortrose were of outstanding merit.

AMATEURS' FLOWERS IN VASES.

Mr. JAMES SMITH, Darvel, was awarded 1st prizes in classes for (1) six vases dissimilar; two each of Selfs, Fancies, and Yellow ground Picotees; (2) vase of Selfs; (3) vase of Yellow ground Fancies; (4) vase of White-ground Fancies; (5) vase of Yellow ground Picotees; (6) two vases of Fancies; and (7) two vases of Yellow-ground Picotees. Mr. S. HYSLOP, Langholm, showed the best vase of White-ground Picotees; and Mr. E. KENWRIGHT staged the winning pair of Selfs.

AMATEURS' FLOWERS ON STANDS.

In a class for six Self Carnations, Professor BURNSTALL, King's Norton, won 1st prize. His best blooms were Sunbeam, Fiery Cross, and Bookham White; 2nd, Mr. S. HYSLOP, who showed very good blooms of General French, Solfaterre, and Gordon Douglas.

Six Fancy Carnations.—1st, Mr. JAMES SMITH, who had Lieutenant Shackleton, J. J. Keen, and Pasquin in beautifully fresh condition; 2nd, Mr. E. KENWRIGHT. The last named exhibitor excelled in a class for six Yellow ground Picotees, his blooms of F. W. Goodfellow, J. J. Keen, and Constance being very clean and pure.

Mr. J. J. KEEN, Southampton, won 1st prizes in classes for (1) six White ground Picotees, and (2) six Bizarre or Flake Carnations.

The most successful exhibitors in the division reserved for amateurs who do not grow more than 300 plants were Mr. J. T. SIMISTER, Denstone; Mr. LAYLAND, Bordesley Green; Mr. A. J. HILL, Handsworth; and Mr. J. H. CAMM, Smethwick.

PREMIER FLOWERS (DRESSED).

Bizarre Carnation.—Spendthrift, exhibited by Mr. C. H. HERBERT.

Flake Carnation.—Gordon Lewis, exhibited by Mr. C. H. HERBERT.

Heavy-edged White-ground Picotee.—Ganymede, exhibited by Mr. C. H. HERBERT.

Light or Wire-edged White-ground Picotee.—Paula, exhibited by Messrs. A. R. BROWN, LTD.

Heavy-edged Yellow-ground Picotee.—Romance, exhibited by Mr. C. H. HERBERT.

Light-edged Yellow-ground Picotee.—W. L. Hodgkinson, exhibited by Messrs. A. R. BROWN, LTD.

Fancy Carnation.—Liberté, exhibited by Messrs. A. R. BROWN, LTD.

Self Carnation.—Peach Blossom, exhibited by Mr. R. G. RUDD.

PREMIER FLOWERS IN VASES.

Self Carnation.—Rosy Morn, exhibited by Mr. T. M. TRANTER.

Fancy Carnation.—Brilliancy, exhibited by Messrs. A. R. BROWN, LTD.

Yellow-ground Picotee.—W. L. Hodgkinson, exhibited by Messrs. A. R. BROWN, LTD.

White-ground Picotee.—Silas Oshaldiston, exhibited by Mr. C. H. HERBERT.

White-ground Fancy Carnation.—Lord Kitchener, exhibited by Mr. R. G. RUDD.

FIRST-CLASS CERTIFICATES.

To Crimson Bizarre Spendthrift, exhibited by Mr. C. H. HERBERT; to White-ground Picotee Charity, exhibited by Mr. J. J. KEEN; to Yellow-ground Picotee Mrs. G. W. Gottwaltz, exhibited by Messrs. A. R. BROWN, LTD.; to Yellow-ground Picotee W. L. Hodgkinson, exhibited by Messrs. A. R. BROWN, LTD.

SPECIAL PRIZES.

The Gold Medal offered to the exhibitor gaining the greatest number of points in the first division was awarded to Mr. C. H. HERBERT, and the Gold Medal in the second division was won by Mr. JAMES SMITH. The Writers Butler Silver Medal, offered to the most successful exhibitor in the third division, was won by Mr. J. T. SIMISTER.

HONORARY EXHIBITS.

Silver Medal to Mrs. THOMPSON, for Cacti; to Mr. J. SCANDY, for Sweet Peas; and to Mr. H. J. JANNER, for Violas.

TRADE NOTES.

CHAMBER OF HORTICULTURE.

THE question has been raised as to why Trade Federations and Associations were not officially invited to the preliminary consultative meeting of the Chamber of Horticulture, held on the 17th ult. at Donnington House, Norfolk Street, Strand. The explanation is given by the Hon. Secretary, Mr. H. Morgan Veitch, in the following letter:—

"The recent meeting was merely convened for the purpose of discussing in a preliminary way whether the scheme, if launched, would be assured of the necessary support and success. For this purpose those of us who for some years past have been hoping to see a Chamber of Horticulture formed, invited a few friends to attend and give us the benefit of their views, but no Federations and Associations were invited officially, as it was felt that this would be premature until we had something definite to put before them.

"Now that the scheme is assured of success steps are being taken to draft the form of constitution for approval, and this will be submitted at a full meeting to which those interested in any branch of horticulture (including Trade Federations and Associations) will be publicly invited. It is proposed to hold this meeting in the autumn, as the month of August is too busy a season for many to attend. The date and place of the meeting will be announced in due course.

"I venture to think that the trade already recognises that there are many questions affecting horticulture as a whole which can usefully be dealt with through a united body representing all branches, and that there are many instances in which an injury to one branch of horticulture must inevitably act indirectly to the detriment of other branches.

"The functions of the Chamber of Horticulture would, in fact, be very similar to those already performed by the Railway Clearing House on behalf of the various railway companies; these, of course, manage their own internal affairs, but when any danger threatens railway interests as a whole, or when any constructive reform is desirable, which would prove of universal benefit, then the various companies sit and act as one body through the medium of the Railway Clearing House. *H. Morgan Veitch, Hon. Secretary.*"

MR. DAVID KING.

THE visitors to the Royal Horticultural Society's exhibition on July 30 included Mr. David King, of Osborne Nurseries, Murrayfield, Edinburgh, who came especially to see the home-grown bulbs, and, incidentally, to make enquiries concerning plants suitable for forcing to produce cut flowers early in the coming season. Mr. King received a hearty welcome from many brother Scots and many southerners who have made his acquaintance at horticultural gatherings in Edinburgh.

RESEARCH IN PLANT BREEDING IN SCOTLAND.

A CONFERENCE on the subject of the establishment of a research station in plant breeding in Scotland was held in Edinburgh on the 26th ult., presided over by the Secretary for Scotland, Mr. Munro, M.P., who was accompanied by Sir Robert Wright and Dr. Greig of the Board of Agriculture for Scotland. Representatives of the Highland and Agricultural Society, the Scottish Chamber of Agriculture, the Scottish Seed Trade Association, and the National Farmers' Union of Scotland were present. The conference was addressed by the Secretary for Scotland, who emphasised the importance of the proposal, and stated that the Government would grant pound for pound of every sum subscribed for the promotion of the object for which they were met. On the motion of Dr. Douglas, of Auchlochan, seconded by Mr. H. W. B. Crawford, chairman of directors of the Scottish Chamber of Agriculture, a resolution commending the project was unanimously approved. Mr. W. Cuthbertson, of Messrs. Dobbie and Co., supported the proposal. A further motion in favour of the appointment of a committee to confer with the Board of Agriculture was moved by Mr. Gardner, Hillingdon, the committee to consist of representatives from a number of associations, including the Scottish Seed Trade Association, and agreed to.

It was seconded by Mr. D. Bell, the president of the Scottish Seed Trade Association, who said that he was so convinced of the national benefit to be derived from the scheme that he would give £1,000 towards its establishment. At a previous meeting the Highland and Agricultural Society voted a sum of £2,000 towards the fund. The promoters hope to obtain a minimum sum of £20,000.

MR. E. J. BAYLEY.

FORMERLY with Messrs. Dickson and Robinson, and Messrs. J. Veitch and Sons, Mr. E. J. Bayley has now commenced business on his own account as a seed, plant, and bulb merchant at Shrewsbury, with shop and offices at 4 and 5, Corn Exchange Buildings, and grounds at Bayston Hill.

CROPS AND STOCK ON THE HOME FARM.

THE PLOUGHING OF GRASS LAND.

MUCH correspondence is going on in the daily Press as to the wisdom of ploughing more grass land. No doubt in some parts, where skilled labour is scarce, it is not wise to add to the existing arable land for fear of neglect of the proper cultivation of that already in hand. I have no doubt whatever that where moderate pasture-land exists and it is not needed for stock much better results can be had from the land under the plough, especially when we see the excellent crops of Oats, Wheat and Potatos growing this year on recently ploughed-up pasture.

Where, however, grass land is simply ploughed up and sown without any special cultural preparation or manurial aid good results cannot be expected, especially if the field under cross cropviously produced but moderate crops. Too many persons treat the land in quite an inconsiderate manner, and then complain of the principle of ploughing-up if success does not follow their puny efforts. There is an old adage in

connection with the land. If you put nothing in, what can you expect to get out of it?"

SHEEP FOR STOCK.

Those who keep sheep with the double object of producing mutton and aiding corn production will be commencing their flocks for the coming season by drafting out ewes useless for breeding, and adding to the flock their young ewes—last year's lambs—or by the addition of new stock from other flocks.

The best kind of sheep to keep is entirely a matter of circumstance. No breed equals the Hampshire Downs where close folding for cereal crops to follow is the main aim in keeping sheep. No other breed produces lambs of such size and quality in so short a time. The South down breed may give mutton of higher quality, but is not so suitable for close folding, especially where the land is heavy. In the latter case a suitable cross is provided by Hampshire Down ewes mated with Southdown, Oxford, Suffolk, or Leicester rams. Where there is a large area of grass land and only a small area of arable land, the Cheviot breed is useful, as it succeeds better on grass than the Hampshire Down breed; these sheep can also be placed on arable land for eating off roots preparatory to a cereal crop.

If Hampshire Downs or any other pure breed is favoured I strongly advise the registration of pure-bred animals, as these always command a higher price than cross-breds of any kind. Where lambs are required in January, and that is considered a good time for the Hampshire Down breed, mating should begin in early August. One ram to fifty ewes is sufficient.

LATE TURNIPS.

No time should be lost in sowing the latest Turnips for sheep food in March and April. Hardy Green Round is one of the best varieties. The roots bury themselves well under the surface soil, and are not nearly so liable to damage by frost as those which stand out of the ground. Rape added in small quantity provides useful and appreciated food. One and a half pound of Turnip and half a pound of Rape per acre will be ample. I prefer to drill the seed, especially where Charlock grows freely, as the opportunity is then provided for running the horse hoe through the ground quite early, and thus getting rid of much Charlock, but where broadcast sowing is practised no such opportunity is afforded, and the Charlock quite smothers the Turnips and seriously affects their progress. It is wise to add 3 cwt. of superphosphate per acre at the time of drilling.

HARVESTING WHEAT.

Given a week's sunshine the cutting of this cereal should be general in the South. To obtain Wheat of extra "strength," bright red in colour and full of gluten, cutting should take place when the corn is three-quarters ripe; indeed, the straw may still have a green hue. When Wheat is allowed to become thoroughly ripe before being cut the corn is very liable to "brit," i.e., shake out by handling. In this way much corn is lost during carting.

SURFACE CULTIVATION.

When the weather is dry, hoeing among roots, especially Mangolds, is of great benefit to the crop, admitting air to the roots as well as removing weeds, which rob the soil of plant food and smother the growth of the crop. The early-sown Mangolds will now be too large in the leaf to permit the use of the horse hoe among them. Late sown plots can be so hoed, and where the plants are not growing luxuriantly 1 cwt. of sulphate of ammonia per acre will accelerate growth.

UTILITY POULTRY.

Rhode Island Red is one of the best breeds, the hens laying large brown eggs freely during the autumn and winter, and there is no denying the fact that brown eggs have a fascination that white eggs do not possess. The chickens grow sturdily, and make fairly good table birds. The feathers are dark red and legs yellow. The Plymouth Rock also lays brown eggs, and especially good are the "barred" type, which are good foragers and fine table fowls, a little coarse perhaps, but useful where weight is desirable. White and Buff Orpingtons also lay brown eggs. The latter are especially good in winter, while the former give eggs in July, when many other breeds are resting. Both these breeds give good table fowls, are hardy, and easily reared. Hens of the Buff type make good mothers, and that is a trait most useful to the poultry keeper.

Layers of tinted eggs are White and Silver Wyandottes, both of which lay rather small eggs. The most prolific layers are the White Leghorns; the male birds should be pure white in feather, with a bold, arching tail, a huge, richly-coloured comb, pure white ear lobes, deep orange-coloured legs, and a bold, upstanding carriage. Hens of a good strain of Black Minorca lay the largest eggs. Both of the last-named breeds are of little value for table purposes. A strong point in their favour as egg producers is that they are non-sitters. *E. Molyneux.*

BLANKET WEED IN PONDS: *R. H.* When the Blanket Weed is a great nuisance in a pond or lake it may be destroyed either by spraying with a copper sulphate solution, or by dragging copper sulphate through the water in parallel lines, as advised on p. 40, in answer to *J. E.* In some cases spraying may be a more convenient method than dragging, especially when the pond or lake is narrow and the weed is abundant at the surface of the water. The spraying mixture should be made by dissolving copper sulphate at the rate of 1½ oz. in 2 gallons of water; so far as we are aware spraying with this solution will do no harm to the fish.

CROPS DAMAGED BY HAIL: *E. H. M.* As the fruit trees have been defoliated so severely it will not be desirable to impose a further check by summer pruning; in all probability new growth will start at the ends of the shoots, and the new leaves will assist the trees, but if the leafless shoots were summer pruned the basal buds would endeavour to push into growth. The Dwarf Beans are not likely to recover, but if the damaged portions of the Runner Beans are cut away and the remainder tied up to the supports, sufficient branches should form and give a late crop of Beans. Do not prune the Roses, as every leaf is valuable. Cauliflowers are useless if the hail has cut out the centres; obtain strong young plants and make a new plantation at once. The late Potatos, having been so badly injured, can hardly be a success, but they should not be lifted so long as there is a green leaf and shoot above ground.

GRAPES WITH SPLIT BERRIES: *G.* The Black Grapes (Lady Downe's Seedling) and the small bunch of white ones, probably Foster's Seedling, with split or cracked berries, suggest that the roots of the Vines are subject to an excess of moisture. The position of the vinery and outside borders is such as to aggravate the trouble, but much may be done to prevent cracking in the future by covering the outside border with corrugated iron or old frame lights during very wet weather, and during very cold or snowy periods in winter. Allow an extension of lateral growth, especially towards the top of the rods in the case of Lady Downe's Seedling and any other varieties that have hitherto shown a tendency to produce cracked berries. Vine mildew is not present, but a mould has formed where the split berries are in contact with each other, and decay has commenced. The long bunch of Grapes represents the popular Muscat of Alexandria variety; this needs more warmth than the other varieties to enable it to perfect its fruits. A few of the berries show evidence of a light attack of "spot" (Gloeosporium ampelophagum). See reply to *H. G.*, p. 20.

HUMOGEN: *J. A.* Humogen is a proprietary preparation, said to contain the nitrifying bacteria so essential in the soil. Experiments have been carried out with it on various crops, and whereas in some cases the results have been good, in other instances they have been negative. With regard to the failure of the Apple crop, this is due to the unseasonable weather prevailing at the time the trees were in bloom.

LECTURES TO ALLOTMENT HOLDERS: *G. P.* Our advice is that you arrange your own syllabus, and depend upon your practical knowledge and experience when lecturing. Commencing with soil management and manures, proceed with various garden crops, dealing with these in groups, such as roots, pod-bearers, greenstuffs and salads, Onions, Leeks and Shallots, Tomatos, Marrows and Cucumbers; seed sowing, transplanting, insect pests, and diseases, will provide ample scope for separate lectures. Arrange the syllabus so that the subjects are dealt with so far as possible at suitable times, and having settled the main subjects and dates, set out under each heading the most important points. For instance, Potatos will be a subject for one evening, and under this heading you might put Selection of Setts, Change of Seed, Varieties, Sprouting, Planting, Manures, Earthing up, Spraying, Lifting, Storing. Follow on this suggestion with the subject put down for each evening, and you will have a complete syllabus for your series of lectures. The set of printed lectures on "Vegetable Cultivation," published by the Royal Horticultural Society, may be helpful and suggestive.

NAMES OF PLANTS: *A. S.* Artemisia tanacetifolia. — *B. S.* Euphorbia Lathyris (Caper Spurge).—*H. S. B.* 1, Lathyrus grandiflorus; 2, Lychnis chalcedonica; 3, Sedum spectabile.—*E. W.* 1, Platycodon grandiflorum; 2, Browallia demissa; 3, Solanum decurrens.—*F. D. L.* (a) Rosa sp., probably sinica; (b) Crinum Powellii; (c) Spiraea Bumalda var. Anthony Waterer.—*W. J. H.* Lysimachia vulgaris.—*S. W. J.* 1, Ficus Parcellii; 2, Phyllanthus glaucescens; 3, Helxine Soleirolii.—*J. M.* We do not recognise the variety of Rose; send to a nursery grower who can compare the variety with those in his collection.

ONION FLY: *H. S.* Pamphlets dealing with the life history of the Onion Fly and the means for preventing attacks of this pest, may be obtained on application to the Board of Agriculture, Whitehall Place, Westminster.

POINTS FOR VEGETABLES AND FRUITS: *A.* The Royal Horticultural Society's *Code of Rules for Judging* will be helpful to you in estimating the point values of vegetables and fruits staged at an exhibition. According to this *Code* the maximum points allowed for the kinds you mention are as follows:—Round and Kidney Potatos, 8; Broad and Longpod Beans, 6; Runner and Dwarf Beans, 7; Cabbage, 6; Celery, 8; Marrows, 6; Cucumbers, 7; Peas, 8; Lettuce, 6; Parsnips, 6; Beet, 6; Carrots, 8; Onions, 8; Currants, 3; Raspberries, 5; Gooseberries, 4; Strawberries, 6. Loganberries are not listed in the edition quoted from, but these should be pointed in the same way as Raspberries.

POTASH FROM FLOWER STEMS: *M. L.* The store of potash may be increased by burning the old stems of perennial Sunflowers and Jerusalem Artichokes, as well as those of Giant Sunflowers. The ash should be gathered when dry, and stored in a dry shed.

WEED IN POND: *J. E.* The plant you send is Potamogeton pectinatus. As a strong specific would probably be necessary to kill this weed it would not be safe to use copper sulphate in the presence of trout, and we can only suggest that you should cut the growth as close to the bottom of the pond as possible and drag it out before it seeds.

Communications Received.—C. E. S.—J. O. B.—E. H.—W. W.—T. H.—G. S.—W. W.—C. H. P.—G. H. H. W.—S. H.—A. C. D.—W. W.—F. P.—W. L. L.—A. S. S.—G. H. C.—R. W. T.—M. S. A.—E. S.—ANXIOUS—E. T. C.

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CONTENTS.

ILLUSTRATIONS.

NOTES FROM KEW.—VIII.*

BEING in my fortieth year at Kew I have seen a considerable number of giant blooms and go. The great Amorphophallus Titanum arrived at Kew as a tiny seedling in the same month and year as I did. Sir Joseph Hooker was careful to impress us with particulars of its wonderful proportions, and after ten years exactly, June, 1889, we had it in flower. It stood over the great Water Lily tank, and those who saw it in its prime experienced delight tempered with disgust, for its fœtid odour was in proportion to its great size. The tuber, before it flowered, weighed 57lbs., but the enormous inflorescence reduced it considerably. A peduncle as thick as a blacksmith's arm, a great club-like spadix 5 feet long, and a spathe a yard deep and 4 feet across were all developed in sixteen days, so that we could almost see them grow. A swarm of bluebottle flies buzzed round the flower, which lasted only forty-eight hours, when the odour ceased. A second plant flowered about ten years later, but there is no plant at Kew now.

Another giant with a powerful and disagreeable odour, which flowered first in Messrs. Henderson's nursery at Maida Vale under Mr. James O'Brien's care, also flowered some time later at Kew. When figuring it in the *Botanical Magazine* in 1881 (t. 6,567), Sir Joseph Hooker stated that in many respects it was one of the most gigantic of Orchids. "I know of none with so stout a rhizome, so large a leaf, or such massive inflorescence." It was named by Reichenbach in compliment to Dr. Beccari, to whom Kew was indebted for the first living plant of the titanic Amorphophallus. I doubt if there is a plant of Bulbophyllum Beccarii anywhere in cultivation now. Other giant Orchids which flowered at Kew in my time included the plant of Grammatophyllum speciosum which Mr. Sander obtained at great expense from Malacca for the Chicago Exhibition, but gave to Kew instead, where it flowered in 1902. It is alive still, but much reduced in size, owing to an overdose of manure, which nearly killed it. The late Mr. James H. Veitch saw a specimen of this Orchid in the Botanic Gardens, Penang, which measured 42 feet in circumference, and bore 30 spikes, each 7 feet high, on which there were thousands of big yellow and brown flowers. Lissochilus Mahonii from Uganda, named after John Mahon, one of Kew's best men, who died of sleeping sickness contracted in Uganda, flowered at Kew in 1905, its spike, 8 feet high, bearing about three dozen flowers, in shape not unlike those of Disa grandiflora and twice as large, with pink, wing-like petals and a large, green, yellow and purple lip. It died soon after flowering. Eulophiella Peetersiana had ceased to be exciting when it flowered at Kew in March, 1908.

Giant Palms, Cycads, and Pandanads have made their *début* at Kew. There was great rejoicing over the double Cocoa nut, two noble plants having been raised, and, when old enough, planted in the Palm House, where cold winters proved fatal to them. There never was a worse home for tropical plants than the Kew Palm House. It is an engineer's structure, very fine and imposing, but about as well fitted for the cultivation of tender plants as King's Cross Station. Only the strong and long suffering among the plants from the tropics can stand its winter conditions. The severe winter of 1916-17 was fatal to our large double Cocoa-nut and many other ultra tropical plants, including the common Cocoa nut, some Pandanads and a good example of Para Rubber (Hevea brasiliensis). The structure is all right; it is the internal arrangements of the Palm House that are all wrong.

The next largest tropical house is No. 4 and in it many big things have grown to perfection. Anderstia nobilis is quite happy there, and another big legume, Baikiæa insignis, is in prime condition, and flowering freely at the present time. This West African tree is even more wonderful than the Anderstia. Mr. Willis has tried to show what its flowers are like in the photograph reproduced in fig. 18, but the picture falls a long way short of the real thing; yet, no shorter than the description in the *Flora of Tropical Africa*. The flowers are so delicate in texture and so fugacious that only a clever, patient artist with some imagination could represent them in a picture, and it would have to be in colour. The leaf has two pairs of leathery leaflets which may be 10in. by 4in., and the flowers are in pairs or threes on the end of the short branches. In bud they are finger-shaped, with a dark-brown, velvet-like covering. They open quickly and the five petals spread out Cattleya-like, four of them 6in. by 3in., pure white, and as delicate in texture as Poppy petals. The fifth is narrower, infolded, clear sulphur yellow, and may be called a yellow lip. The only flower at all like this is that of the climbing Camoensia maxima, also from West Africa, where it is said to adorn the loftiest trees with its splendid bunches of milk-white, golden-edged flowers. This flowered at Kew in 1896, and although it appears to be happy enough, it has not flowered since.

These are not plants for Covent Garden, nor yet for the villa greenhouse. They are among the wonders of the tropics, and are grown and shown at Kew and other botanical gardens for the same reason as the elephant, giraffe, polar bear, python, chimpanzee, and such like wonders of the animal kingdom, are shown at the Zoo.

Another giant, also in flower now in No. 4 house, is Amomum hemisphæricum (figs. 19 and 20), a native of Java. It has been at Kew since 1895, and for the last fifteen years or so has spread itself over a bed in No. 4, by means of its thick, Ginger-like rhizomes. The noble, leafy, frond-like stems are from 10 to 14 feet high, and the largest leaves over 2 feet long by 7 inches wide, dark green above, brown-red beneath. The flower-scape and head are drum-stick like, the scape being 4 or 5 feet long, and the head 5 inches across. The figure in the *Bot. Mag.*, t. 7,592, represents a young flower-head, partly developed, other heads having the outer bracts reflexed, showing a rich scarlet colour and suggesting the Waratah (Telopea). I have never seen A. imperialis alive; the figure of it in *Bot. Mag.*, t. 5,192 (1832), where it is called Alpinia magnifica, was made from a plant flowered in the garden of Lord Milton, Wentworth, who obtained it from Mauritius. Allowing something for artistic licence, that figure is not unlike the Kew plant under notice, the only marked difference between them being in the length and width of the bracts. I wonder if some one has blundered, and whether the two are really the same species. A. Granum paradisi, the seeds of which are known in commerce as Melegnetta Pepper or Grains of Paradise, is a very different plant, as also are all other species of Amomum that I have seen. Be the name what it may, the plant now grown at Kew as Amomum hemisphæricum is a magnificent member of the great Ginger family.

Lilium sulphureum is, in a way, certainly as grown at Kew, the giant of the genus. It has always grown well in a greenhouse, formerly in the Himalayan House, and in recent years in the conservatory (No. 1) where it is in flower now. From one bulb, probably the size of a man's head, there spring three stems, each over 10 feet high and as thick as my thumb, bearing altogether twenty magnificent blooms, each 8 inches long and about 6 inches across, pale sulphur yellow, tinged outside with purple, and delightfully fragrant. This is the only one of the Burmese Lilies that behaves well under cultivation. L. primulinum, L. Bakerianum and L. Lowii were always "miffy," and they left us years ago. None of them will thrive out-of-doors. *W. W.*

* Previous articles appeared in the issues of January 19, February 9, March 9, April 6, May 18, June 8, and July 6.

ORCHID NOTES AND GLEANINGS.

CATTLEYA WARSCEWICZII ROCHELLENSIS.

INTRODUCED and first flowered by Messrs. Siebrecht and Wadley of New York, and described in the *Gardeners' Chronicle* of November 10, 1917, it is highly satisfactory to see by a flower sent by Samuel Gratrix, Esq., West Point, Whalley Range, Manchester (gr. Mr. J Howes), that a vigorous specimen of this valuable albino is still in cultivation. The specimen sent is 8 inches across and of fine shape, pure white, with a suspicion of blush tint in the front part of the lip, around the clear yellow disc. There are several varieties of white forms of Cattleya Warscewiczii, culminating in the pure white C. Warscewiczii alba var. Firmin Lambeau, with which M. Firmin Lambeau, of Brussels, secured a First-class Certificate and Gold Medal at the Royal Horticultural Society, July 16, 1912, and for which Messrs. Armstrong and Brown of Tunbridge Wells, paid 210 guineas at the dispersal of the late Mr. J. Gurney Fowler's collection in 1916.

LAELIO-CATTLEYA IVERNIA VAR. MURIEL WILSON.

A LARGE and gorgeously coloured flower of this remarkable variety of the cross between Laelia tenebrosa and Laelio-Cattleya callistoglossa (L. purpurata × C. Warscewiczii) is sent by Samuel Gratrix, Esq., West Point, Whalley Range, Manchester. In many of the varieties of L. C. Ivernia the narrowing influence of L. tenebrosa is against floral perfection, but in this variety the best features of L. C. callistoglossa are retained and amplified by Cattleya Warscewiczii, which has given the intensely dark ruby-red lip, shading to maroon in the centre and to dark violet towards the margin, as well as the yellow patches on each side of the tube. The petals are 5 inches in width and gracefully arranged, both sepals and petals being bright rosy mauve, with strong white bases to the midribs.

CATASETUM DARWINIANUM WITH MALE AND FEMALE FLOWERS.

THE illustration (see fig. 21), prepared from a photograph taken by Mr. C. P. Ratfill, of a plant which flowered at Kew some time ago, well represents the character of both sexes of this very interesting species and the wonderful arrangement of the flowers to secure fertilisation by insect aid. The setae, upon which the slightest touch by the exploring insect frees and ejects the pollinia to be borne by it on its visit to the female flowers, are invitingly displayed on each side of the cavity in the labellum, leading to the nectary which attracts the insect, as seen in the central flower of the upper three male blooms. The two female flowers are totally different in shape, their labellums being fleshy, helmet-shaped, usually reversed, and green tinged with brown. The uniformity in the colouring and arrangement of the female flowers in species bearing totally different male flowers is very remarkable, so far as they have been tested by the proportion of species which have produced flowers of both sexes in cultivation. The flowers are sometimes borne on separate spikes, but occasionally both are on the same inflorescence, as in the example now illustrated.

(Photograph by E. J. Wallis.

FIG. 53.—BATEMAN INSIGNIS: FLOWERS WHITE AND YELLOW.
(SEE p. 55.)

Species of Catasetum are most interesting, and it is to be hoped that they and others equally interesting Orchids, will not be allowed to drop out of cultivation. Grown in pans or baskets for suspending in an intermediate house and subjected to a drying off process in the resting season, similar to that given to deciduous Dendrobiums, and a rather lower temperature during that period, they are not difficult to cultivate successfully.

STRAWBERRIES.

PREPARING RUNNERS FOR PLANTING.

Now that all the fruits have been gathered, runners are very numerous in Strawberry plantations. If no new plants are needed all runners should be cut back close to the old crowns, but where young stock is desired a sufficiency of runners must be secured at once, either to pot up for forcing or for new plantations. Great attention is usually given to Strawberries intended for forcing, but for new plantations they are often lifted and planted without any preparation. This is a great mistake, as with proper care a new plantation will always yield a quantity of fruit the year after planting, but plants carelessly treated seldom bear a crop until the second year.

The best plan is to layer each runner into a 3 inch pot; place a few leaves or a little rough material at the bottom of each pot, then fill to the rim with loam to which a little manure has been added, and make the soil very firm. Pot rooted runners, but if the roots are only beginning to show, secure the runner with a peg close to the neck of the plant'let.

In dry, bright weather water must be supplied daily; when the runners have been layered ten days or so, and the roots have taken a substantial hold of the new soil, sever them from the old plants, and stand the pots on a hard base. The foliage will droop a little for a day or two, but in a week or ten days the plants will be ready for potting or planting, which should be done before the pots are filled with roots.

Another plan is to cut fibrous turf into pieces about 4 inches square; turn them grass side downwards, and peg the runners down to them. The roots soon penetrate the turf and confine themselves to it. Plants so treated invariably grow well, and this plan is far superior to that of allowing the runners to root into the ordinary soil of the beds. Many of the roots in the latter case will be broken in the lifting, some will have no soil attached to them, and all will receive a check. After planting it is necessary to pay due attention to watering to encourage growth, because Strawberries which have not made much good progress before cold weather sets in cannot give a full crop the following season. *James A. Paice, Aldenham Vicarage Gardens, Watford.*

PLANTING RUNNERS IN SMALL GARDENS.

THE scarcity of fruit this season will suggest the planting of Strawberries in small gardens, as Strawberries give quicker returns than any other kind of fruit: they may, indeed, be grown successfully as an annual crop, and in that sense will escape the restrictions placed on perennial crops in allotments. Now is the time to plant in order to secure a crop next year; a plentiful supply of farmyard or stable manure should be dug into the ground, allowing time for the soil to settle down afterwards, as it is especially necessary to make the ground very firm around the young plants when they are planted. Pinch off new runners as soon as they appear, and encourage growth as much as possible. Suitable distances for the first year are one foot between the rows and 9 inches between the plants: after the first crop has been gathered alternate rows and alternate plants

should be removed, thus leaving the rows 2 feet apart and the plants 18 inches apart in the rows.

For regular cropping and good flavour no strawberry surpasses Vicomtesse Hericart de Thury (syn. Garibaldi) where the soil is favourable; if the soil is light Royal Sovereign is a better variety, and generally proves to be a heavy cropper, but in bad seasons it often suffers from late frosts when the Vicomtesse escapes injury by reason of its abundant foliage and compact habit. *W. H. Divers, Westdean, Hook, near Surbiton.*

LARGE FRUITS.

I am induced to write a few words respecting what may be called abnormally big fruits of Strawberries. Early in the present season a dish of an unnamed variety of fruits was exhibited by Mr. Prince, from the Hatfield Gardens. These fruits were remarkably well grown, and had travelled well, but instead of providing "three dates" these would have provided three. The Hatfield Gardens have a reputation for big Strawberries: some of the finest fruits I ever saw were shown by the late Mr. Norman many years ago; these were forced specimens of Sir Charles Napier and President. In my earlier years I remember Sir Harry, a big, ugly fruit at its best, and I am led to ask, do we need such big Strawberries? Personally I think not, for a medium sized fruit is almost always chosen by the connoisseur. *James Hudson.*

CULTURAL NOTES

TREATMENT OF VEGETABLES IN DRY WEATHER.

The value of mulching plants in hot, dry weather has been emphasised this season. Our Peas were mulched with long, strawy litter as soon as they were staked; the litter was placed as high up the stakes as possible to keep the hot sun from the haulm, and when water was given to the roots it was allowed to soak through the litter. Thrips soon became troublesome, but spraying with a solution of nicotine by means of a Knapsack sprayer on two or three occasions weekly kept them in check. If the crops are stunted in growth they should be given a light dusting of sulphate of ammonia and watered immediately afterwards. The method of growing Peas in trenches, especially on light soils, has much to recommend it, and if the trenches are made wide enough, and the Peas sown in double rows, they will succeed better than when sown broadcast along the trenches, and are more easily thinned. This method permits of the application of a mulch of short manure, and allows air to reach the plants freely; for late Peas, where mildew is prevalent, this method of planting is a great advantage, and results in a saving of seed.

In dry weather Broad Beans are greatly benefited by a mulch after the soil has been drawn up to the trench, and the same is true of Runner Beans. The practice of raising Onions in boxes indoors, and transplanting them in the open, has again proved successful, seeing that the Onion maggot has been very prevalent on plants raised from seed sown out-of-doors in the spring. Mulching the plants with horse manure, dusting them with soot, and watering them in the evenings, have kept them growing freely, but watering without mulching is detrimental to them. The present showery weather, with sudden bursts of sunshine, will soon cause mildew to appear on the plants; as a preventive damp them, and afterwards dust the growth with equal parts of lime and sulphur. Celery has been much troubled with the leaf-mining maggot (Tenbritis oneopordinis); frequently dusting the foliage with soot when the leaves are damp, and repeating the treatment when the soot is washed off, will prevent the pest spreading, or the plants may be sprayed with a solution of nicotine, preferably made from Auto shreds. If Celery is stunted in growth through the dry weather, give a light application of nitrate of soda and wash the fertiliser in, when the plants will grow readily and be less susceptible to attacks of the maggot. *J. B. Wedds, Eaglehill Gardens, Reading.*

TREES AND SHRUBS.

DABOECIA POLIFOLIA.

Hardy shrubs that flower from July onwards include several members of the Heath family. The Connemara Heath, Daboecia polifolia, is a delightful plant during the whole of its flowering period, which extends from early in June to November. It is a free-growing little shrub usually reaching a height of 12 inches, and sometimes more. The flowers, which are borne in short terminal racemes, are egg-shaped, and

(Photograph by E. J. Wallis.

Fig. 79.—AMORPHUM HEMISPHAERICUM: SHOWING PART OF RHIZOME, BASE OF STEM, AND INFLORESCENCE, THE STEM OF WHICH IS 5 FEET LONG.

(See p. 58.)

individually larger than those of any of its generally grown allies. In colour the typical form is of a pleasing shade of rosy-purple, but there are other well-marked varieties. The variety alba shows a decided contrast to the type; atropurpurea is remarkable for its deep, rich colour, whilst bicolor (or versicolor) is a distinct and singular variety. The latter bears both white and purple blossoms on the same plant, and even on the same spike, while some flowers are partly white and partly purple. As implied by its popular name this Daboecia is found in Ireland, but it also occurs over a considerable tract of country in Western Europe. It is sometimes known as Boretta cantabrica. A fairly cool yet light, moist soil suits it best. Like most of its allies, it resents the presence of lime in the soil. *W. T.*

FOREIGN CORRESPONDENCE.

OLD GARDENING BOOKS.

In co-operation with the Library of the Department of Agriculture, which is trying to build up its horticultural collection as far as possible, I have attempted to compile a list of gardening and pomological works published prior to 1800, and have actually located many of the books themselves in some four or five libraries of this country which are rather rich in gardening literature. However, the great proportion of the 16th and 17th century works are as yet unknown and unknown to me. Under these circumstances the publication in *The Gardeners' Chronicle* of notes like those of Mr. E. A. Bunyard on Cotton's *Planter's Manual*, and Mr. C. H. Payne on "Old French Gardening Books," to mention only two of the most recent ones which have delighted me, is of great value and importance.

Mr. Bunyard's identification of Cotton's *Planter's Manual* was new to me, as my attention had never been directed to Cotton, but his further identification of *Instructions pour les arbres fruitiers*, credited in the Catalogue de la Bibliotheque de la Societe Nationale d'Horticulture (1900), also in M. Gibault's admirable paper in the Journal of that society for November, 1905, to Rene Triquet, as being actually by François Vautier, was one I had long suspected, upon finding an entry of the same title in Sagner's Bibliotheca Botanica under "Vautier, N." (sic).

Sagner's I have often wondered if the "one of the Abbey of Saint Vincent in Fraunce," from whom Miscall's book was said to have been translated, might not have been Davy Brossard, but never having seen a copy of *L'art et maniere de semer pépins et de faire pepinières*, I was unable to prove the fact which Mr. Payne has now shown in your columns. Many of Mr. Payne's identifications are, of course, fairly well known, as Evelyn's *French Gardener*, and London and Wise's *Retir'd Gardiner*, but others, like Bishop Fleetwood's appropriation of Vallemont, and the translation published at Dublin in 1758 of De Combles, *Traité de la culture des pêches*, as well as the English version of Venette, of which the identity was fairly well concealed, I had never seen attributed to the actual authors, though it was possible to identify them, partly through sheer lucky guessing, and partly through the courtesy of interlibrary loans, which enabled me to compare books from libraries separated by many hundreds of miles. *Marjorie F. Warner, Bibliographical Assistant, Bureau of Plant Industry, U.S. Department of Agriculture.*

PLANT NOTES.

SEDUM HIRSUTUM BOETICUM.

At a casual glance this Sedum resembles some of the forms of S. album, but the habit is dwarfer, compact, and the flowering stems only 5 inches high. The white flowers are of the largest size for the last-named species, and produced in terminal cymes. A closer inspection reveals other differences, for the fleshy, oblong leaves of the short, barren shoots are densely covered with glandular hairs, which would fit it to live under very dry conditions of soil or climate. The leaves on the flowering shoots are much less hairy, being only thinly pubescent. The plant is a native of South Europe, but neither the type nor variety seem recorded as having been introduced to cultivation before. It has been flowering for some time past in the Alpine house of the Royal Horticultural Society at Wisley. Judging from its appearance it would be most suitable for wall gardening in this country, as it should be kept dry at the roots during winter. *J. F.*

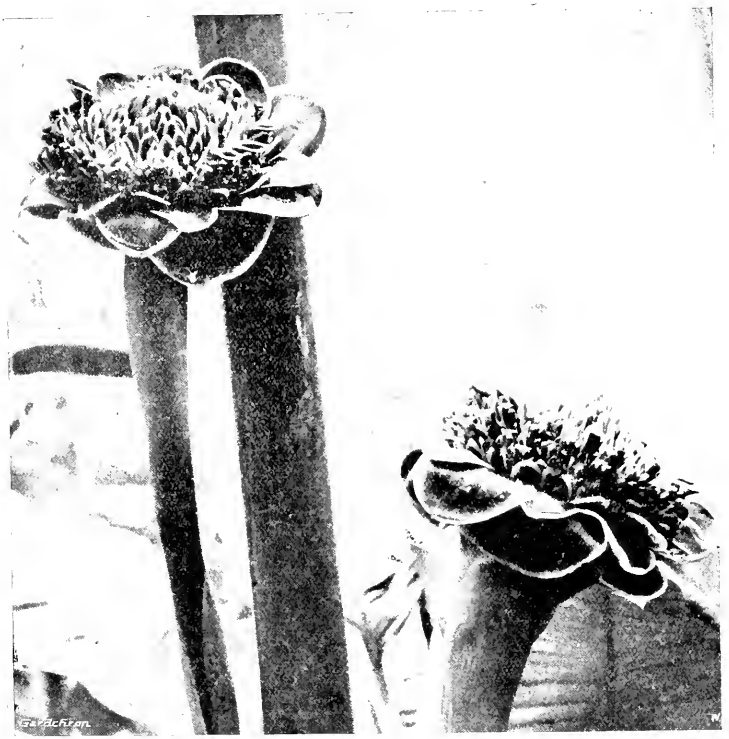
HARDY FLOWER BORDER.

PLATYCODONS.

PLATYCODONS, or Balloon Flowers, though appreciated where seen, are not common in gardens. This is not due to their lack of beauty or interest, as they are attractive plants in every respect. Their glaucous-looking leaves and loose spikes of flower are of considerable value in a garden, while the varnished, balloon-shaped buds, which open to a good size, give them an appearance sure to attract the observer. Their comparative absence from gardens is mainly due to the circumstance that they are often lost in winter, owing sometimes to their dislike to the alternations of wet and cold, and sometimes to attacks of slugs and snails. The fleshy roots are easily damaged, and it is no uncommon thing to see good plants going off in a season they are rare. The forms of these are P. g. plenum, with double purple blooms, and P. g. album plenum, with white flowers.

One of the most delightful of the Balloon Flowers is P. g. Mariesii, sometimes accorded specific rank as P. Mariesii. It is dwarfer, and has comparatively large flowers, of a deep, glossy, purple-blue. A still dwarfer variety, called minimum, is also, I believe, in cultivation, but I have not met with it. In order to avoid the risk of loss in winter, in cold districts Platycodons should be grown in dryish soil, and in some parts, as well as where slugs are destructive, it is well to cover the crowns in winter with a few dry ashes.

Platycodons are generally raised from seeds, which are produced freely, and germinate readily if sown in pots under glass in spring. *S. Arnott.*



(Photograph by E. J. Wallis.

FIG. 20.—ANOMATUM HEMISPHAERICUM: FLOWER-HEADS 5 INCHES ACROSS, BRACTS BRIGHT SCARLET. (SEE p. 55.)

The Platycodons in commerce are generally recognised simply as varieties of Platycodon grandiflorum, sometimes called Campanula grandiflora. This species is a native of China and Japan, and has generally purple, bell-shaped flowers in a wild state. The author of *The Garden of Japan* tells of seeing "On the mountains the magnificent purple Campanula, Platycodon grandiflorum, with pale lilac and double varieties in the gardens. I shall never forget the effect of thousands of these beautiful flowers carpeting the hillside of Bandai-san."

This form is in cultivation, and is a good plant, which grows from 2 to 4 feet high. It is synonymous with P. chinense. The white variety, P. g. album, is a charming plant also, and the lilac one mentioned in the above work is occasionally seen in British gardens. The double varieties are also in commerce, though

The Week's Work.

THE KITCHEN GARDEN.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

CELERY.—The earthing-up of Celery is best done in three stages at intervals of a fortnight, and when the plants are quite dry. Early plants should now be ready for the first earthing, after decayed leaves and side shoots have been removed. In small gardens each plant should be tied up lightly with a piece of raffia. Make the soil as fine as possible and place it firmly and carefully round each plant with the hands. If watering is necessary, a good watering of diluted liquid manure should be given a day or two before earthing-up. Care must be taken not to earth-up so as to prevent young leaves from growing freely. As a further precaution against slugs and Celery Fly, frequent light dustings of soot should be given in the early mornings when the plants are moist with dew. Continue to remove and burn leaves attacked by the Celery Fly, which is very prevalent this year.

PARSLEY.—There is a daily demand for this herb, and only those who have failed at any time to maintain a supply can fully appreciate the advantage of having an abundance at all times. Luckily, Parsley transplants readily, and this transplanting is the remedy for many causes of failure. At the present time failures may be made good by carefully thinning out the seedlings, and planting the thinnings 6 inches apart in the form of an edging to a sheltered border. Those who have frames to spare during the winter will do well to devote one or more to Parsley. In anticipation of this a bed or beds of the right size should be planted so that the frames may be put over them before severe frosts are experienced. A very little shelter will frequently save Parsley.

SPINACH.—A good sized plot of ground should now be sown with Round or Prickly Spinach for the winter supply. As this prefers light, warm soil in the winter a south border or other sheltered position should be chosen. On heavy, cold soils a good dressing of leaf-soil, burnt refuse, or other light material should be forked in previous to sowing. Sow thinly in rows 15 inches apart, and subsequently thin the plants to 4 inches apart.

TURNIPS.—Owing to the showery weather experienced, Turnips sown in July have made rapid progress. Where seedlings have fared badly another sowing should be made at once. This is a crop that cannot well be dispensed with, and every effort should be made to secure as good crops as possible. Only in the southern counties does it pay to sow later than the middle of August, as so much depends on the weather of the autumn months. If more roots are needed and late sowings are unavoidable, preference should be given to Early Snowball and Early Milan varieties, which grow quickly into useful size, but the best winter Turnips are Chirk Castle and Orange Jelly. Veitch's Red Globe raised in July has not infrequently kept good through the following winter.

CARROTS.—Make a sowing of Shorthorn varieties in cold frames which have been cleared of other vegetables, as the crop will be found most useful for winter and early spring use. Sow thinly in rows 9 inches apart and make the soil rather firm.

THE HARDY FRUIT GARDEN.

By JAS. HUDSON, Head Gardener at Gunnersbury House, Acton, W.

SEASONABLE MANURIAL STIMULANTS FOR APPLES, PEARS, AND PLUMS.—About this time last year, when heavy crops of fruits were developing, I applied blood manure as a top-dressing with most marked results. The foliage became darker green and the fruits benefited. This year I could not obtain similar manure, but have secured a good brand of Peruvian guano, which I hope soon to use as a surface-dressing, lightly hoeing it in at once. A moderate amount will be applied, even where there is no crop, if I think that the trees stand in need of it. It will, in any case, assist in finishing up the growths and plumping-up the fruit buds for another season. This manure will induce increased vigour whilst the leaves are still capable of performing their functions.

EARLY APPLES AND PEARS.—The earliest varieties will now be ripening. It is a common mistake to allow both early Apples and Pears to remain too long upon the trees. Fruits so left never keep well nor ripen in the best condition. Where there is a good crop of any given variety of either dessert or culinary Apples, it pays well to thin the fruits when they are a fairly good size. Lord Grosvenor Apple, planted on warm or early soils, may

have its fruits thinned twice with distinct benefit to the specimens left to develop fully. As an early dessert Apple Worcester Pearmain may be treated in like manner; early-gathered fruits will not, of course, be of the best quality as regards colour, but the largest and best-coloured may, in this instance, be gathered first. When these early fruits are gathered they should be used as quickly as possible, but if they have to be kept for some time they should be placed in a cool store and in the dark, otherwise early shrivelling may take place. Rev. W. Wilks is one of the very best of early Apples; it is already colouring with us and is, as a consequence, being discovered by the birds. This is an Apple that it pays well to net in good time, and it is also one that may with distinct advantage be thinned early. In every case, if an Apple tree is bearing a good crop, it will pay to spend a little time in watering it during dry periods.

Cleaning the Fruit Room.—If this work has not been done already it must be no longer delayed. I like to use a paraffin and soft soap emulsion as a cleansing medium after the fruit room has been fumigated with sulphur. I am afraid there will be no difficulty this year in finding room for storing the crops. Do not attempt any painting, but the walls and ceilings may be distempered if necessary. Never store fruits on either hay or straw. Open lattice work makes good shelving. The floor may be strewn with clean sand to provide ideal conditions for all late-keeping varieties—of which every fruit will be needed in the coming winter.

FRUITS UNDER GLASS.

By W. J. Gyrse, Gardener to Mrs. Dearsley, Keele Hall, Newcastle, Staffordshire.

The Orchard House.—When the fruits have been gathered from them the trees in pots should be plunged outside and plunged up to the rims in ashes, or other light material, where they will set and ripen their buds of fruiting wood, as the case may be, in time for next year's forcing. Any unnecessary or overcrowded growths should be shortened or removed so that the fruiting wood may have full exposure to light and air. Peaches and Nectarines in pots will soon require attention; old soil may be removed from the roots and fresh compost provided, or, if needful, larger pots may be used. It is advisable to carry out this work while the leaves still remain, as then the trees quickly make new roots, which help the buds considerably. When the trees are potted they should be placed in the house, watered and syringed to prevent the foliage from flagging, and kept close for a few days. More air may then be admitted, and in a few weeks, when they are thoroughly established, the trees should be placed outside for the remainder of the season. Strong, rich, fibrous loam, old mortar rubble, burnt refuse, bone meal, and a little soot, will form a suitable compost without the addition of manure. Apple and Pear trees in pots may now be placed outside with advantage, but care must be taken to support the fruits by means of nets or ties, or they may be broken off during removal. An erection of poles and garden netting must be provided to protect the fruits from birds. Should the trees in the orchard house be unduly crowded, late Plums in pots—such as Coe's Golden Drop, the Imperatrices, Rivers' Late, and Jefferson, may be placed outside if they are sufficiently forward in a sunny position, where, from having full exposure to light and air, the fruit will finish better than under glass. All trees in pots will need liberal supplies of water, and should Pears suffer from neglect in this respect the fruits will be hard and gritty. It is advisable to give weak stimulants to trees that have been exhausted by bearing heavy crops. At the close of each hot day the syringe or garden-engine should be brought into use to cleanse and refresh the foliage.

Established Trees in Successional Houses.—The latest varieties of Plums established in borders, with fruits once thinned and swelling, require no artificial heat. They thrive best in a free circulation of air from early morning onwards, and the top ventilator should be open a little at night. In a house at Keele we have standard, half-standard and fan-trained trees which invariably give excellent crops of first-rate fruit under cool treatment. Syringing may be continued up to the time the Plums begin to colour, provided the water is free from lime. Atmospheric moisture after this stage can be produced by damping the paths, walls, and stems. Keep young shoots pinched, and tie in lateral growths required for extension. Old-established trees will need large supplies of water, and if the mulchings or top-dressings are washed out give liquid manure twice a week.

PLANTS UNDER GLASS.

By E. Harriss, Gardener to Lady Wantage, Lockinge Park, Berkshire.

Roman Hyacinths.—There seems to be an opportunity this year of obtaining some early-flowering bulbs of Roman Hyacinths, but it will be wise to order them early, as the supply will be very limited. The bulbs should be potted as soon as obtained. Provide a fairly substantial compost, or the flowers will be weak and of little decorative value. When potted, select them all in and cover the pots with ashes out of doors, and allow them to remain covered until growth commences; they should then be placed in a cold frame until required for forcing.

Early Narcissi.—It was said about to a considerable extent all bulbs required to produce flowers for cutting are planted in boxes or pots. Provide for the bottom of the boxes with rough potsherds, for this is all the drainage needed. The rest of the bulbs may be potted in 6-inch or 7-inch pots or planted in fibre in ornamental bowls or vases, and treated as advised for Roman Hyacinths.

Gloxinias.—As the old plants pass out of flower place them on a shelf in a dry, airy house and withhold water. Water must be given sparingly. Plants raised from seeds sown in the spring are now commencing flowering, and it is necessary to support them with a neat stake as the flowers open. With the best advice flowering pots may be allowed a cool cold frame atmosphere.

Mignonette.—A batch of this sweet-scented annual are welcome at any time, and by careful management they may be had nearly all the year round. A sowing may be made now for producing flowers in the spring. Use 3-inch pots and sow a few seeds in each, in a compost of loam, leaf-soil, sand, and finely crushed lime rubble. Water them in and plunge the pots in ashes in a cold frame. Shade them till the seedlings are well through the soil, then gradually bring them into full light and afford ample ventilation. Reduce the seedlings to three or four in each pot when they are large enough to handle, and at this stage they may be taken indoors and placed on a shelf in a cool house. The plants will need the support of stakes at an early stage. Allow them plenty of fresh air at all times, but avoid cold draughts. When they are well rooted pot them on into 3-inch pots.

THE ORCHID HOUSES.

By J. Collier, Gardener to Sir Jeremiah Colman, Bart., Gatton Park, Reigate.

Laelia.—Such dwarf growing Laelias as L. longipetala and L. pumila, with its many varieties, are now commencing to grow afresh after a short season of rest, and as new roots are produced from the bases of the young shoots any necessary repotting should be attended to. These Orchids require liberal supplies of water during their season of growth, therefore the compost must be sweet and porous. Shallow pans, without side holes, form the most suitable receptacles, and these should be filled to one-third of their depth with clean crocks; press the compost moderately firm around the roots and leave sufficient space for a surfacing of living heads of Sphagnum moss. These Laelias grow well when suspended from the rafters of the cool house, and exposed to a reasonable amount of light and air at all times. Water should be applied sparingly to newly potted plants until they have become re-established, after which they should be given a plentiful supply until they have passed their flowering stage, but they should be kept moderately dry throughout their resting season.

Dendrobium.—Many of the species and hybrids of the deciduous Dendrobiums will now be completing their growth, and soon after the terminal leaf appears the plants should be allowed cooler, drier conditions, where they may have more sunlight and air. It is not always advisable to remove Dendrobiums from their growing quarters immediately they appear to have finished their growths; it is better, where practicable, to select a position on one side of the house, where more light and air can be admitted. Gradually expose the plants to morning sunlight for a longer and longer time, and draw up the blinds a little earlier in the afternoon. These Dendrobiums should not be allowed to become quite dry at the roots, therefore water should be supplied whenever the compost appears dry. Any sudden check at this stage will cause the buds to start into premature growth. After a week or two of this treatment the plants may be removed to a house where considerably less shade and a drier and more airy atmosphere can be provided. The new pseudo-bulbs may be loosely tied to neat stakes, or be allowed to assume their natural dependent habit. D. Wardianum flowers more freely and its flowers are seen to better advantage when the pseudo-bulbs are not rigidly tied up. Specimens still in vigorous growth should be afforded plenty of heat and moisture, and be treated according to their stage of development. Several other species of Dendrobium, including D. Phalaenopsis, D. superbiens, D. bigibbium, D. Goldiei, and others of this class are growing freely and require plenty of heat, sunlight and moisture. When affording water to these latter species the compost should be made thoroughly moist throughout, and allowed to become dry between each application.

THE FLOWER GARDEN.

By R. P. Brotherston, Gardener to the Earl of Haddington, Tyninghame, East Lothian.

Climbers.—These plants are often seen in a tangled, unmanageable state at this season, due to a considerable extent, to inattention during their earlier stages of growth, and to the lack of a due removal of superfluous shoots. But, even so, at this season an extra amount of labour is required to regulate shoots and keep them in that condition of trimness which is so essential to the pleasure of an ordered garden. There is far too little drastic pruning of climbers in spring, when, were old, overcrowded plants cut down to the ground, much trouble would be avoided, and the beauty of the plants themselves would certainly be greater.

Pelargonium.—Cuttings should be secured as soon as possible without lessening the amount of bloom in the beds or borders. As a rule the shoots for cuttings should be taken from parts of the plants where their removal will be unnoticed, and where it will benefit the plants by giving more space to those left. It saves a great amount of labour if each shoot is severed just below a leaf. The rest of the work needed to form cuttings should be proceeded with at once, and the finished cuttings laid out to dry in a shaded place for two days at least in order that the wounds may be healed before insertion. It is true that Pelargonium cuttings succeed better in small receptacles than in large ones, and better in pots than in boxes. But much depends on management, and if the boxes are stood on trellises to allow for perfect drainage during rain, the advantage where large numbers are grown is on the side of the boxes. Avoid overcrowding, especially where large-leaved varieties such as Paul Crampel are grown, but Madame Crousse need not have so much room. The Ivy-leaved section need not be propagated so early as the Zonal section, nor need the cuttings be dried to the same extent. Watering requires great care, as soils differ so much, but the less water is used until spring the better for the plants.

EDITORIAL NOTICE.

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

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

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

APPOINTMENTS FOR THE ENSUING WEEK.

TUESDAY, AUGUST 13—
Royal Hort. Soc. Comm. meet.

WEDNESDAY, AUGUST 14—
Roy. Botanic Soc. of London annual meeting.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 62.4°.

ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, *Thursday*, August 8, 10 a.m., Bar. 30, temp. 66.5°. Weather—Sunny.

Ormskirk Potato Trials, 918.

Potato wart disease continues its march of invasion into our fields and gardens, sometimes slowly, sometimes more rapidly, but all the time surely gaining ground. No means of evicting it when once it has found a footing are known. A chance discovery led to the belief that some Potatos, even when placed in the midst of the enemy, come unscathed through the ordeal, and give crops entirely free from the disease. The Board of Agriculture arranged to grow varieties on infested ground in order to test their power of resisting attacks. A badly infested piece of ground at Ormskirk, in Lancashire, in the midst of an important Potato-growing centre, was selected for the trials, and they were placed in the capable hands of Mr. John Snell, who has had charge of them ever since. The Ormskirk Potato Society, the Board of Agriculture, and Mr. Snell are all to be congratulated on the result. The work has led to the division of the existing varieties of Potato into immune and non-immune sorts. It has stimulated the raising of new varieties, each in its turn to be brought to the test, for it is doubtful whether in the course of ten or twelve years non-immune varieties will be able to be grown at all, and no one can therefore be sure that a new variety, unless immune, however good it may be in other directions, will be worth putting on the market. Immune varieties have proved, so far, completely and continuously immune, but there is room for others, for no really good cropping early variety commonly grown has resisted attack, and Arran Chief, King Edward, and all the Up-to-Date group fall victims. This year no fewer than 301 stocks are on trial at Ormskirk, and over 200 names are included. In order to make the results of the trials more widely known, the Food Production Department, under whom the trials are being conducted, this year arranged for a series of demonstrations to different groups of people interested in this important crop, and the whole of the past week has been occupied by them. It is too early to speak with certainty upon the immunity or otherwise of the new varieties. This will be better seen when the crop is lifted; but several have succumbed while others are apparently free. None of the varieties similar in growth and flower to Up-to-Date withstand attack, but all those like Abundance remain free, and we shall await the publication of the complete results with interest. Mr. Laurence Weaver, the Controller of Supplies in the Food Production Department, has several times expressed the hope that a branch of the Institute of Botany, which is foreshadowed, will be established at Ormskirk to carry on the work so well begun, and to extend it especially in the direction of eliminating names which are merely synonyms. Some light is thrown upon this difficult question by the present trials, but the differences which occur in the growth of the same variety from different sources make the recognition of synonyms no easy matter, and it is further complicated by the raising of new seedlings closely related in all characters to existing ones, but perhaps more vigorous with the strength of youth. The conditions under which the trials are carried out do not enable the full cropping capabilities of the different varieties to be ascertained, nor do they give any indication of the value of different varieties for different soils and climates; but for these purposes the trials are not designed; this is not their intention. Their first purpose is to test resistance to wart disease, and this test is the test to carry out well. Their next is to help in the determination of constant characters by which varieties can be recognised. This also they do, but it is doubtful whether it can be done by study in any one place of a plant changing in appearance so much according to source, season, and soil conditions. Careful study, accurate recording, and comparison of records from several sources will be needed before final judgment upon synonymy, and the facts which lead to the belief that names are synonymous, are established. But the accumulation of such observations will render easier the determination of what may be called basal characters.

The Manure Heap.

Further investigations* by Dr. E. J. Russell, in collaboration with Mr. E. H. Richards, mark an advance in our knowledge of the extent and conditions of loss of the fertilising ingredients of the manure heap. The authors find that the losses are at a minimum when storage takes place under anaerobic conditions, that is to say, when air is denied access to the manure. If manure be exposed to the air, the loss of dry matter is greater, and the more vigorous decomposition is attended by a higher rise of temperature than that which takes place when air is excluded. Proceeding to apply their results to the practical problem of storage of farmyard manure, Dr. Russell and Mr. Richards point out that the main sources of value of stored manure lie in the total nitrogen and in the ammonia which it contains. Therefore, the objects to aim at in a manure heap are the conservation of as much dry matter and as much ammonia as possible.

Tests carried out under varying conditions show that these objects are achieved by storage under anaerobic conditions at a temperature of about 80° F. In these conditions there is a considerable formation of ammonia and no loss of nitrogen, although a certain amount of dry matter is lost.

Unfortunately, these satisfactory results cannot be secured by storage in heaps. No matter how carefully the heaps may be constructed, there is always a loss of nitrogen and never an accumulation of ammonia. Therefore, the ideal method of storage would be the water-tight closed tank, to which access of air could be prevented. Needless to say, this method is not always practicable, and when it is not, the next best method must be practised. If the manure can be kept undisturbed under the beasts, there is less loss than if it is removed regularly and placed in heaps.

When it must be removed daily, there is nothing for it but to make the heap in the manner best adapted to keep down loss, that is to say, thoroughly compacted; and no less important is it to store the heap under cover. If left exposed to weather, the loss of dry matter is increased by 8 per cent., that of ammonia by anything from 10 per cent. to 33 per cent., and also a considerable loss of total nitrogen. Field experiments confirm the conclusion that manure stored under shelter is more valuable than that stored in the open, and show that even a slight shelter is beneficial.

Further experiments are being carried out with the view of determining how the knowledge obtained in the course of these investigations may be best turned to practical account—particularly by testing the value of a modification of the Belgian liquid tank, built under the animals, to receive the fluid part of the excreta.

Decrease of production and difficulty of supply make the problem of conserving the value of manure an increasingly important one, and it is to be hoped that these investigations will lead to a solution of the problem.

* *Journ. of Agric. Soc.*, VIII., Part 4, Dec., 1917.

HORTICULTURAL SCHOLARSHIPS FOR WOMEN.—The Food Production Department is offering ten scholarships, tenable at the Horticultural College, Swanley, Kent, for a course of commercial horticulture, of 38 weeks' duration, which will commence about September 19. The scholarships will cover cost of maintenance and tuition, and preference will be given to candidates over 21 years of age who are suitable for the positions of forewomen, instructresses, etc.

Only women who have had considerable experience in gardening and will undertake the work of food production for the duration of the war are eligible. Full information and forms of application can be procured from the Food Production Department, 72, Victoria Street, Westminster, but no applications will be considered which are received later than August 20.

War Items.—Lieutenant Robert Croux, proprietor of the Croux Nurseries, in the Val d'Aulnay, near Paris, has just been killed in the Champagne district.

—— M. Leon Barbier, Junr., of Messrs. Barbier and Co., Orleans, is now acting as interpreter with the American Army in France.

Appearance of Potato Disease.—The recent wet weather, as was expected, has resulted in numerous outbreaks of Potato disease "blight", and should warmer weather be experienced it is feared that very serious damage may be done. The Food Production Department has received reports of a large number of cases from Wales, where the disease seems to be much more prevalent than in any part of England. The English areas so far reported is more or less badly affected are Devon, Cornwall, Somerset, the Isle of Wight, Essex and Lancashire. Only one or two slight cases have been observed in Lancashire, where, as a rule, the disease does not appear at all until later in the season. Once the disease breaks out there is no absolute cure, although its spread may be checked by spraying with Burgundy or Bordeaux mixture.

Habits and Diseases of the Honey Bee.—The Board of Agriculture has appointed a Committee to study the life-habits of the hive bee with the object of improving the conditions under which bee-keeping is carried on in England and Wales, and to investigate the epidemic diseases of the bee, more especially the disease or group of diseases which pass under the name of "Isle of Wight" disease. The Committee consists of the Master of Christ's College, Cambridge University (Dr. A. E. Shipley, F.R.S.), Professor Punnett, F.R.S. (Professor of Genetics, Cambridge University), Dr. G. S. Graham Smith, M.D., Professor G. C. Bourne, F.R.S., D.Sc. (Professor of Zoology and Comparative Anatomy, Oxford University), Professor W. Somerville (Professor of Rural Economy, Oxford University), Mr. T. W. Cowan (Chairman of the British Bee-Keepers' Association), Mr. G. W. Bellamore, Mr. J. C. Bee Mason, and Mr. A. G. L. Rogers (Head of the Horticulture Branch, Board of Agriculture and Fisheries), with Mr. R. H. Adie as secretary. It is proposed to undertake the study of healthy bees at Cambridge and the investigations on "Isle of Wight" disease at Oxford. The Committee would be glad to receive specimens of bees suspected of suffering from "Isle of Wight" disease for examination and experiment. Communications on this subject should be addressed to Mr. A. G. L. Rogers, 4 Whitehall Place, London, S.W. 1.

Sydney Botanic Gardens.—Mr. Maiden's Report on the Botanic Gardens, Government Domains and Centennial Park, Sydney, N.S.W. for 1916 has only now reached this country. It is of unusual interest, because it records, though briefly, the celebration of the centenary of the Botanic Gardens on June 15, 1916. On this occasion the Director gave a short historical address, and speeches were delivered by his Excellency the Governor and other high officials. The Governor also declared three Vistas to be named: The Captain Cook Vista, the Sir Joseph Banks Vista, and the Governor Phillip Vista. A further ceremony was the laying of the foundation-stone of a Museum of Botany and Horticulture. As a consequence of the war the Report appears in a greatly abbreviated form, though the home activities of the establishment suffered little delay. A collection of Australian Orchids has been established in the open air. Rocks and snags have been used to accommodate tree-loving Orchids, as well as those found growing in rock-clefts. Shade has been provided by a Tea-tree (Leptospermum). A list of about 75 species included in the experiment is given, and very many of these are of the genus Dendrobium. The provision of seats seems to be on a more liberal scale than here at home. For example, one hundred new seats have been added in the "Government Domain," making a total of about 550, each being of sufficient length for four persons. Experiments with the outdoor cultivation of Palms have given some surprising results. Upwards of forty species have proved hardy in Sydney, many of which were previously supposed to require artificial heat.

Simple Methods of Keeping Fruits and Vegetables in a Fresh Condition.—Several simple and very interesting methods of keeping fruits and vegetables in a fresh state for considerable periods are discussed in a recent issue of the *Wealth of India*. It is stated that ripe (not over-ripe) and unblemished fruits may be kept for a month or so if immersed for a moment in water almost at boiling point, and packed into dry tins as soon as the moisture has dried off. The tins must be perfectly clean, and provided with close-fitting lids. Another method is that of packing sound fruits in powdered cork in boxes; the fruits must not touch each other, and there must be at least one inch of cork dust around each, with 2 inches at the bottom, sides, and top of the box. Sawdust has not proved a satisfactory substitute for powdered cork, but very fine sand, thoroughly washed and dried, and used in the same way as recommended for cork dust, has been found to be a good preservative for many vegetables and for all but very soft fruits. The method

(Photograph by C. P. Raffill.

Fig. 21.—Catasetum darwinianum. Three upper flowers male, two lower flowers female, the pouch occupying the anterior position in one and the posterior position in the other. (See p. 76.)

which appears to be especially suitable for preserving Apples and Pears consists in coating sound specimens with a warm mixture made by melting 1 lb. of resin, 1 oz. tallow, and 1 oz. beeswax together, but not allowing the mixture to boil. After having been rubbed over with whiting or precipitated chalk, a small pointed stick is inserted to serve as a handle, and each fruit is then dipped in the hot mixture. After dipping, the fruits are held in the air for a moment to allow the coating of solution to solidify. The handle is not removed, and all that remains to be done is to place the treated fruits on shelves or in boxes. When required for use the coating is cracked and peeled off. A point to be remembered is that when the fruits are exposed to the air, no matter which preserving method has been adopted, they must be used at once, as decay sets in rapidly.

REMARKS ON THE CONDITION OF THE FRUIT CROPS.

(See Tables in *Gardeners' Chronicle* for August 3, p. 42.)

SCOTLAND, N.

CAITHNESS.—Owing to an extraordinary storm on June 17 what promised to be splendid crops of fruits and vegetables were spoiled. The crops of every fruit promised to be far above the average of former years, and the month of May being very warm they were far advanced, hence the damage was more severe than it would otherwise have been. *W. F. Mackenzie, Thurso Castle Gardens, Thurso.*

BANFF.—Cherries and Plums promised well until the first day of May, when we had 10 degrees of frost, which wrought much damage, as the trees were in full bloom. *George Edwards, Ballindalloch.*

SCOTLAND, E.

ABERDEENSHIRE.—The fruit crops in these gardens are a good average. The continuous drought in the early part of the season prevented the earlier varieties of Strawberries from swelling sufficiently. *John W. Kinnear, Haddo House Gardens, Aberdeen.*

BERWICK.—The fruit crops in this district are a partial failure, probably owing to long-continued drought. The blossom in the early part of the season was extraordinarily good, but cold winds interfered with the setting of the fruit. Some varieties of Apples have set well, but Bramley's Seedling is very poor. *Peter Smith, Duns Castle Gardens, Duns.*

CLACKMANNAN.—The fruit crops in many parts of Scotland are very small. Gooseberries, in some districts, gave a fair crop, but Black and Red Currants were very poor. Plums, Apples and Pears are very scarce; Cherries, Raspberries and Strawberries yielded a fair average crop. It is believed that the east winds of April and May caused the failure, not late frost, as is so often the case. *Alexr. Kirk, Paton Street, Alloa.*

EAST LOTHIAN.—Apricots and Peaches have set full crops, but Plums, which blossomed quite as profusely, failed in a number of cases to set any fruit. Plums Monarch, Jefferson, Washington, Kirke's and Victoria are the only varieties bearing a crop. Only on young Pear trees are there any fruits, and Apple trees are only sparsely fruited. The Strawberry crop was spoiled by the drought, but other small fruits did not suffer. There is a larger crop of Figs than usual. *R. P. Brotherston, Tyninghame Gardens, Prestonkirk.*

FIFESHIRE.—This season we have the poorest crops of the larger kinds of fruits we have had for years past. Gooseberries, Raspberries and Red Currants bore abundant crops, and Black Currants yielded an average crop of good fruit. *William Henderson, Balbirnie Gardens, Markinch.*

—— I have seldom seen better prospects for good fruit crops while the trees were in bloom, but late frosts and cold east winds damaged the blossom. *D. McLean, Raith Gardens, Kirkcaldy.*

FORFARSHIRE.—The Apple crop in this district is most disappointing. During the early part of April there was a considerable quantity of blossom, but it did not develop, owing to several chilly nights about the end of the month. All kinds of bush fruits were small owing to lack of moisture. *Andrew McAndie, Ruthven Gardens, Meigle.*

KINCARDINESHIRE.—There was an exceptionally good show of flowers on most fruits this season, but owing to the long spell of dry weather the setting of fruit has been disappointing, especially in the case of Strawberries. Plums are, however, very promising, and Raspberries yielded well. *William Thomson, Urie House Gardens, Stonehaven.*

LINLITHGOWSHIRE.—The fruit crop is the poorest that has been experienced for many years. Cherries and Pears are almost complete failures, and the same could be said of Strawberries. Apples are slightly better, but still below an average crop. *John Highgate, Hopetoun Gardens, South Queensferry.*

MIDLOTHIAN.—The long-continued drought has had a bad effect on the fruit crops. Pears are few; there are fair crops of Apples on some trees, while the majority are bare. Strawberries were very small, but small fruits, on the whole, have been plentiful. *J. C. Scott, Oxenfoord Castle Gardens, Ford, Midlothian.*

—— All fruit trees showed more than a usual quantity of blossom, but during the flowering period a constant cold north-east wind prevailed, the result being the worst fruit crop experienced for many years. The soil is light and sandy, on gravel subsoil. *James Whytock, Dalkeith Gardens, Dalkeith.*

SCOTLAND, W.

ARGYLLSHIRE.—The fruit crops in this locality are much lighter than usual, chiefly owing to the abnormally wet autumn last year, which prevented the wood from being thoroughly matured. Again, when the trees were in blossom a cold east wind prevailed, with frost, causing the blooms to set badly. The Apple and Pear crops are very light; Plum trees on walls, protected with nets, are carrying a fair crop, but standard trees are almost fruitless. Small fruits (with the exception of Black Currants) were comparatively good, both in size and quality. Strawberries, which flowered nearly a month earlier than usual, suffered from the cold winds and late drought, and were not so large as usual. Raspberries were a bountiful crop. The soil is of a shallow, light nature, and if not heavily mulched the crops soon suffer from drought. *George Haig, Barcaldine Gardens, Ledaig.*

AYRSHIRE.—The fruit crops are most disappointing this season, especially Pears, Plums, and Strawberries. Ten degrees of frost on the mornings of April 14, 15, 16, and 17, did serious damage to Pears and Plums, which were in full blossom. Furthermore, cold nights, with a long spell of very dry weather and scorching sunshine during the day, right through the months of May and June, had a disastrous effect on all kinds of fruits in the open, especially Strawberries, the berries of which ceased to swell shortly after they were set. *D. Buchanan, Bargany Gardens, Dailly.*

—— The fruit crops, other than Red Currants and Raspberries, are all much under the average. The trees bloomed too soon, and caterpillars have been very destructive on Apple trees. No spraying was possible, owing to shortage of labour. *William Priest, Eglinton Gardens, Kilwinning.*

BUTESHIRE.—Most fruit trees bore a superabundance of blossom, but we had a period of east and north-east winds from the end of March until the beginning of June, sometimes reaching gale force, which had a serious effect on the crops. Apples on walls are almost a failure, and there are practically no Pears. Bush trees growing in the open flowered later, and the fruit set freely. All garden pests have been very prevalent, and have necessitated much labour and expense in spraying, otherwise the crops would have failed completely. Drought has not troubled us much, a period of three weeks in April being the longest spell of dry weather we had. *John J. Davidson, Ardencraig, Rothesay.*

DUMFRIES.—Black Currants and Strawberries were a little under the average this year, but Red Currants, Gooseberries, and Raspberries did well. Apple trees are bearing a very small crop, but of good quality. Pear trees are yielding a poor crop of low quality. Cherries are also under the average; when in flower the trees looked well, but the fruit set badly. We experienced low night temperatures for a considerable time, which caused the fruits to drop. The soil is light, sandy loam, with a gravel subsoil. *James McDonald, Drycholm Gardens, Lockerbie.*

STIRLING.—Apples, Pears, and Plums are poor crops. The weather was wet and stormy during the flowering period, though there were practically no late frosts. Small fruits were good. Strawberries promised well, but failed to swell satisfactorily on account of lack of rain. *J. D. Cunningham, Duntreath Castle Gardens, Blanefield.*

(*To be continued.*)

ON INCREASED FOOD PRODUCTION.

SPRING CABBAGES.

OF all Cabbages the spring batch is the most important. I have in these pages emphasised the importance of making at least two sowings. The first sowing should be made on July 30, on a finely prepared bed in an open part of the garden, which should not have been manured just previous to sowing. Another sowing should be made about August 10, on some sheltered spot, and the seedlings transplanted as soon as they are ready. For this sowing I recommend Sutton's April, Flower of Spring, and Wheeler's Imperial. The seeds should be sown in drills, thinly. Should the weather be dry, water the drills before sowing; subsequently keep the plants watered and protected from vermin.

As soon as the plants are ready they should be planted on a piece of rich ground, such as the site from which the main batch of Onions has been removed. On heavy soils it will be necessary to dig the ground, and give a top-dressing of soot. If the old Onion bed is not available and rich ground cannot be used, add 4 lb. superphosphate and 2½ lb. of kainit per square rod, and immediately after planting is done distribute 1½ lb. of nitrate of soda over each rod of ground. On light and rich soils it will suffice to work the surface with a Canterbury hoe before planting. Allow from 15 inches to 2 feet between the plants, according to the variety. Some growers place the plants 1 foot apart in the rows and cut out alternate plants before the Cabbages are large enough to spoil each other.

The seedlings, previously transplanted, should, if the weather be dry, be well watered the day previous to planting, so that each plant may be lifted with all its roots preserved and plenty of soil attached to them. Smaller plants may be left in the beds or dibbled in 4 inches apart to remain for the winter and be planted out in spring. After a severe winter there are often many vacancies, and these plants are useful for filling them. Frequent stirring of the soil is beneficial, as it admits air and keeps down weeds; it should be continued during the winter whenever the condition of the soil allows. Rich and stimulating food applied to Cabbages during winter may prove harmful, but after severe frosts are past the crop should be encouraged by applications of soot, nitrate of soda, liquid

manure, guano, and other stimulants, and by frequent hoeing. *Jas. A. Pave, Aldenham Vicarage Gardens, Watford.*

FLAGEOLET AND HARICOT BEANS

All growers of good vegetables will thank your correspondent, Dr. H. E. Durham, for his thorough and interesting article on this subject, and I hope that the Garden Committee at Wisley will take note of his remarks as to the lack of information in the Society's Report on Beans in 1910. There is one point, however, on which I should be glad of further information. I was under the impression, gained at many Exhibitions, that the term "Flageolet" was applied to a particular sort of Bean, of which no more than one or two varieties, having small pale green, kidney-shaped seeds, which are usually eaten after having been dried; but he uses the term as to such they were "Flageolets" only when eaten fresh, and he refers to "Haricots" when ripe and dry. Which is correct? I notice that he found the white-seeded Beans should be sown on the surface or very lightly covered. The majority of such Beans in our cold climate come on so late that they (probably) would not after become really ripe. Can he tell me which of the different varieties he would recommend as the hardiest, earliest and best cropper, and where I can get it? Prolong and Six Finger Mangetouts? Neither the Dutch Runner Beans nor those of the Japanese varieties which I have sown here seem, so far, likely to be of much value. *H. J. Elwes, Colesborne Park, near Cheltenham.*

HOME CORRESPONDENCE.

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

MAGNOLIA GRANDIFLORA AS A STANDARD TREE.—While in Devonshire recently I visited amongst other places, the comparatively mild region of Salcombe and Kingsbridge, where tender plants and shrubs, which are dwarf in most other parts of England, are of astonishing size and vigour. On July 31 I spent a few hours at Bovey Tracey in the south-east of Devon, a sunny, but undistinguished garden part of the I suppose not to be a native road per se. I was amazed to see a large number of standard trees of Magnolia grandiflora, some 30 feet from the ground with expanded flowers and many buds. At Nice, early in November, I have seen the ground under a scattering with the bright red seeds of Magnolia grandiflora, but I have never seen ripe seeds on a standard tree in England. At Falmouth, a tree growing against a wall of a house was still covered with somewhat rain- and wind-dashed blossoms in February. The specimen at Bovey, however, may almost be expected to ripen its seeds this autumn. Perhaps some of your readers may have seen standard trees of Magnolia grandiflora in flower elsewhere; if so, it would be interesting to hear of them. The tree itself does not seem to be tender, but is generally supposed to require a south wall or fence. *Inquirer, Gardener.*

GOOD PRICES FOR HARDY FRUIT.—At the beginning of August I had the opportunity of reading a few recent issues of "Market Report" with respect to prices, and I found that Early Rivers' Plums were selling for "best Kent pack" as much as 15s. per half-bushel. This, I should think, will be almost a record price. It is without doubt a paying Plum to grow for market purposes, as it comes into use when early summer fruits are becoming scarce. As a rule trees of this variety have never failed to give a crop in this locality, but this year hardly a fruit is to be seen. Eckinville Apples are, however, a good crop, and the fruits keep well. Fruits of this Apple have been realising as much as 16s., whilst Beauty of Bath has sold at 20s. to 24s. per half-bushel. *James Hudson, Gunnersbury House Gardens, Acton, W.*

SOCIETIES.

SOUTHAMPTON HORTICULTURAL.

JULY 25 AND 26.—The Summer Show of the above Society, held on the Royal Pier, proved very interesting, but the attractiveness of the exhibits was much impaired by the lack of light in the Pavilion. Vegetables were the principal feature, and included two very fine collections shown by Messrs. SUTTON AND SONS and Messrs. TOOGOOD AND SONS, the first-named firm occupying 125 square feet, and the latter 40 square feet.

In the competitive classes for seven dishes of Potatoes there were four entries. In the premier class (prize, Gold Medal) Mrs. Wm. Wyatt, Esq., Mr. G. Edwards, Savernake Park, gained the first place, Mr. Owen Cattle, Ilfracombe, being second, and Mr. E. F. Hart, of Hoddesdon, Herts, third. Mr. Edwards secured second place in the Amateurs' and Cottagers' Classes, Mr. Cattle and Mr. Hart being third and fourth respectively. Messrs. H. Bryson and S. G. White, both of Eastleigh, and F. M. Vokes of Snodling, Ilfracombe, were successful exhibitors. Fruits were not plentiful, and the competition was confined to two exhibitors, Mr. Myers and T. A. Cotton, Esq., of Mr. Cattle's. The Medal Pears were shown by Mr. Myers.

Flowers in classes provided a good display, considering these are Lady Isobel flowers. Table decorations were not so good as usual, but two shown by Mrs. CLARK, of Basset, were the best of the three staged. Baskets, vases and buttonholes were numerous and effective. Cut flowers were staged by the nurserymen. Bonsai Carnations, shown by Messrs. A. E. Brown, Ltd., King's Acre, and Mr. J. J. Kirk, The Avenue, Southampton, both staged fine collections, the first-named firm securing the premier position. Messrs. Brown also secured the President's Cup. Mr. E. F. Hart was the most successful exhibitor of Perpetual Carnations. Special Prizes were awarded for collections of cut flowers, the efforts of the seven exhibitors in point of colour and shortness of stem. Mr. E. S. Ward, of Lyndhurst, was first.

Miscellaneous exhibits were included in Mr. J. J. Kirk's Group of Sweet Peas, a Silver-gilt Medal; Messrs. E. Lennard, Ltd., a Silver Medal for a spelt display; Messrs. Barr and Sons, and Mr. Wells, Silver Medals for collections of plants.

Most of the classes were well filled, and the Challenge Cup for Roses, the Rose Cup, and the Gold Medal of Southampton were awarded.

TRADE NOTES.

POTATO SPRAYING: PROPRIETARY MIXTURES.

THE Food Production Department states that Potato spraying is much more general this year in England and Wales than ever before, although the recent bad weather, commencing as it did with the date for the first spraying on a large part of the area, probably prevented many persons from doing the summer's desirable safeguard to the crop. The increased popularity of spraying, especially amongst small growers, has led to many enquiries reaching the Food Production Department as to the value of other proprietary mixtures similar to Burgundy mixture. The Department therefore wish it to be clearly understood that they are not in a position to recommend to the use of the growers any particular form or make of these mixtures. No doubt all are quite reliable, on the other hand reports as to serious damage to crops by the use of chemical preparations, on behalf of which the Department are unable to accept responsibility, have been reported to the Department. The only mixtures recommended officially are Burgundy mixture and Bordeaux mixture.

HORTICULTURAL SUNDRIESMEN AND CO-OPERATION.

A LITTLE while ago the question of admitting horticultural sundriesmen to membership of the British Florists' Federation was raised, and the committee decided that the rules of the Federation did not exclude sundriesmen; moreover, they agreed that if sufficient sundriesmen joined the Federation these should have their own sub-committee. As a consequence of these decisions invitations to meet at the Federation's offices, 55, Wellington Street, Covent Garden, were sent to the trade. The meeting, which took place on July 31, was a fairly representative one. Mr. F. S. Mansfield (Osman and Co., Ltd.) was voted to the chair, and Mr. Chas. H. Curtis (sec., B.F.F.) explained that the meeting had been called for the purpose of providing members of the horticultural sundries trade with an opportunity of discussing together the best means of co-operating for mutual interest and protection. He pointed out that their presence at the meeting placed them under an obligation to join the B.F.F. Quite fairly he suggested possible lines of action, such as the formation of a separate society affiliated with, or under the organisation of, joining the B.F.F. or other body and having their own sub-committee to deal with their special problems. The necessity for combination in every section of the horticultural trade was so obvious that there was no need to labour the point, but, as sundriesmen had not yet come in, he had called the meeting, as stated.

There was a general agreement that combination was essential, and though the question of "trading who were and who were not "horticultural sundriesmen" was raised, the general feeling was in favour of inclusiveness rather than exclusiveness. The next points were the best means of bringing the combination desired, and the strong representation and support in dealing with Government Departments, railways, etc. The formation of a separate society was considered inadvisable, and finally, after a free discussion, it was agreed "That this meeting of horticultural sundriesmen resolves to join the British Florists' Federation and have their own sub-committee." The principal speakers were Messrs. Jones, J. Pinche, J. Lambert, Wood, Jas. J. Weathers, F. S. Mansfield, Willis P. Bunyard and Biggs Keeling, and Hannibal. Letters expressing sympathy with the movement were read from various firms. A further meeting will be held early in September.

FLOWER-GROWERS AND FOOD PRODUCTION.

MR. C. H. CURTIS, secretary, British Florists' Federation, writes: "I feel sure your readers will be glad to know that returns from members of the British Florists' Federation prove conclusively that the principal growers of flowers for market are doing their best to food production during the war. Quite naturally, these growers desire to keep their flower-growing businesses in being, but the following figures show they have made great reductions in horticulture, both under glass and out of doors, and have directed their energies chiefly towards meeting the needs of the time. The 101 growers from whom returns have been received have holdings amounting in the aggregate to 1,646 acres 3 roods, of which area 1,296 acres 3 roods 17 rods is arable land, and 274 acres 2 roods 36 rods is under glass. In June, 1914, these growers had 1,235 acres 2 roods 25 rods of land, and 150 acres 1 rood 10 rods of glass under flowers, whereas in June, 1915, the areas under flowers were 825 acres 1 rood 14 rods and 97 acres 1 rood 34 rods respectively. In many cases flowers, notably bulbs, are inter-cropped and over-cropped with food crops. Further, where 82 acres 1 rood 1 rods of glass formerly were under flowers almost the whole of the area is devoted to food stuffs, the raising of cabbage seedlings, or vegetable and crops during spring, summer and autumn consequently the glass area devoted to food production this summer is really 111 acres 3 roods 12 rods. Of the arable land, the area under flowers has been reduced by about 730 acres, and the total area of land under food crops during the present year is approximately 2,799 acres, as against 2,015 acres in 1914. In short, while many of the best growers of flowers have always been large food producers in summer and autumn, they have found a further 730 acres under food production. Only those who know what plentiful supply such growers obtain by intensive cultivation can estimate how great an addition to the nation's food supply has been thus made. These few figures have been obtained for the use of an

: the Committees assisting the Food Production Department, and they furnish a good answer to those who are too ready to condemn flower-growers and flower production without good reason.

CROPS AND STOCK ON THE HOME FARM.

Methods of Farming.

In farming, as in many other industries, changes in methods or in the system of management occur with the changing needs of the nation. In no two counties are precisely the same methods of farming followed. Many counties may have much in common, but the details may be quite different.

In most of the southern counties corn and sheep are the important subjects, and especially is this so in hilly districts where the soil is thin, with a chalk subsoil; but in one county milk and cheese may be the principal products provided grass and water are plentiful; in other counties beef and Potatos may be largely grown. On some farms hay is an important crop, especially where the grass is rich and the situation near populous centres, and in the same counties vegetables may be grown extensively.

Where cereal crops and sheep are the chief aim a system of close-folding of sheep is usually adopted, for the benefit of corn crops to follow. For this method no breed is superior to the Hampshire Down, as the sheep thrive well when closely folded, and the lambs come quickly to maturity. There is no disguising the fact that this method of farming is becoming expensive owing to the increase in wages and in the prices of foodstuffs and material. Another serious set-back at present is the small demand for store lambs, owing to the lack of concentrated food-stuffs such as Linseed cake, which has no equal for fattening. Owing to adverse weather the prospect of satisfactory root-crops is not good. All these items are unfavourable to remunerative returns at a time when store lambs should be leaving the flocks for preparation for the butcher.

Satisfactory crops of Clover, Grass, Sainfoin, Rape and Cabbage are none too plentiful. The high price of Vetch seeds for autumn sowing will militate against a bountiful food supply in May and June next year; at one time Vetch seeds could be bought at 5s. a bushel, but this season the price will be nearer 40s. per bushel. The uncertainty of obtaining a desirable fixed price for Corn during the next few years, to compensate the risk of production; the scarcity of skilled labour, the high price of horses, the difficulty of obtaining feeding stuffs at a reasonable price, the scarcity of certain artificial manures, and the uncertainty of tenure consequent on the sale of so many estates, all have a tendency to depress the farmer and lead him to adopt changes in management.

The difficulty of successfully cultivating Turnips and Swedes, owing to the scarcity of labour and the high price of fertilisers, will set farmers wondering whether the close folding of sheep is still desirable. The management of sheep under this method is an expensive item. On a 350 ewe flock it is quite an easy matter to spend £2,000 annually, and with casualties occurring in an unfavourable season £100 can quickly be lost, and that without neglect or carelessness.

If large numbers of farmers were to dispense with sheep a mutton shortage might ensue. I do not suggest such a drastic change, but suggest a change of the type of sheep. Where an ample acreage of hilly land exists the Scotch, Welsh or Exmoor breeds could be kept; they need less attention than others, and succeed mainly on grass. An alternative scheme would be to improve the existing grass production and rear more cattle of approved breeds for the production of milk and beef. This method would reduce working expenses and add to the food supply of the nation. Even in a small way this suggestion can be carried into effect. Where milch cows are kept the method of buying a number of weaning calves, preferably of a good type of Shorthorn breed, is desirable. No phase of farming pays better than this when it is managed on good lines. Low-priced animals of mod rate quality never pay so well as those of a higher standard of quality; £50 is not an uncommon price for a newly calved heifer of the Shorthorn breed, especially towards the autumn, when preparations are made for a winter supply of milk.

As a hint to intending cattle-keepers, I may observe that pure-bred Guernsey cattle are in demand, especially pedigree strains. This is a highly desirable breed for butter production, and for general utility it is superior to the Jersey breed. Guernseys may not produce such rich cream as the Jerseys, but they give more, are hardy, and when their milking days are over they command higher prices from the butcher. An increase of cattle would reduce the labour in haymaking on pastures, which entail more labour than do rotation crops of Clover, Italian Rye Grass, Lucerne, and Sainfoin. These suggestions are made with a view to economy of labour without reducing the milk and beef supplies.

By reducing the labour entailed by close-folding a flock of sheep a largely increased acreage of cereals can be grown. In the place of sheep a judicious application of artificial manures would be needed to produce continuous Corn crops in the place of root crops.

Quite recently I inspected a hill farm in Wiltshire, of 2,500 acres, successfully managed on the lines suggested. From the success there achieved I am forced to the conclusion that a thorough knowledge of the soil and its requirements and a ready adaptation to changed conditions will yield good results.

Barley can be grown in the same field successfully four times in succession. This hint may be useful to those who need this cereal in small quantities on a limited acreage. It may occur to some that Wheat, which is the main cereal, cannot be grown thoroughly well without sheep, but the increase in cattle during the winter months will provide more animal manure, which, with the aid of Green Mustard ploughed in simplifies Wheat culture. Summer fallowing, followed with farmyard manure at the rate of 20 tons per acre, is the certain forerunner of a good Wheat crop, assuming the weather conditions are favourable, so the small farmer need not despair of a Wheat crop even without the aid of sheep.

Rape, grown 2 feet high, is a valuable green manure for Wheat if carefully ploughed in during September and the land is made firm by the aid of a presser, especially where the soil is light in character. I would also suggest an increase in the acreage of Potatos, which are a paying crop. *E. Molyneux.*

Obituary.

Captain A. E. Keeble.—His friends—and he had many among amateurs of horticulture—will learn with grief of the death, from wounds, on August 6, of Captain A. E. Keeble. Captain Keeble volunteered soon after the outbreak of war. He received a commission, and, after a period spent in this country, during which he acted as instructor in machine gunnery, he proceeded to the Front. Captain Keeble was 46 years of age, and unmarried.

Mr. T. A. Dorrien-Smith—We regret to announce that Mr Thomas Algernon Dorrien-Smith, whose fame in connection with the flower growing industry in the Scilly Isles is world-wide, died on August 6, at the Abbey, Tresco, Isles of Scilly, in his 75rd year. He was a keen lover of Daffodils, as well as an extensive cultivator of these flowers for the London and other markets, and for many years he was a member of the Royal Horticultural Society's Narcissus and Tulip Committee. Mr. T. A. Dorrien Smith was Lord Proprietor of the Isles of Scilly, and in that connection worked continuously for the betterment of his tenants. He not only maintained but added to the wonderful collections of sub-tropical plants made by his predecessors at Tresco, where, in a favouring climate, so many of these subjects luxuriate. Descriptions and illustrations of these famous gardens appeared in *Gard. Chron.*, Aug. 17, 1872, p. 1102; Nov. 22, 1879, pp. 657, 659, 661; and March 12, 1898, pp. 152, 153.

ANSWERS TO CORRESPONDENTS.

Books on Gardening: *M. H. H. Garden Work*, by W. Good (published by Blackie and Son), will meet your needs, but if you wish for a more comprehensive work we recommend *Thomson's Gardeners' Assistant*, in six volumes. You can obtain this from our publishing department, price £2 16s., post free.

Carnations: *H. G., Canterbury.* The stem of the Carnation plant you sent contained the mycelium of a fungus at the ground level, but it is not possible to name it. Spray with a weak solution of potassium sulphide.

Fruits Failing to Ripen on Fig Tree: *M. I. J.* Unless artificial heat is used to accelerate growth during the early part of the season the ripening of a second crop of fruits is hardly probable. If the instructions given from time to time in "The Week's Work" on the cultivation of Figs under glass are followed, there will be no difficulty in obtaining the best results your conveniences for growing Figs will permit.

Fuel for Glasshouses: *E. L. and G. M.* For full particulars apply to the Board of Trade (Coal Mines Dept.), Holborn Viaduct Hotel, E.C. 4.

Names of Plants: *H. C.* 1, Cassinia fulvida; 2, Griselinia littoralis; 3, Cupressus Lawsoniana; 4, Quercus rubra; 5, Juniperus virginiana; 4, Quercus rubra; 5, Juniperus virginiasiocarpa in gardens); 7, Veronica carnosula. —*J. B.* Lilium Martagon.—*J. W.* Lilium pomponium. — 1, *C., Carlisle.* Rondeletia gratissima, syn. Rogiera gratissima.

Peas: *W. H. M. and W. T.* There is no fungus present on the part of the plants submitted, but possibly the roots (which were not included) may have been attacked.

Pear Tree Slug Worm: *J. H.* The offensive slug-like creatures which are destroying the leaves of the Pear tree are the grubs of the Pear Tree Sawfly (Selandria atra). The pest is quite common in some districts, and attacks Cherry leaves as well as the foliage of Pears. The slug-like appearance continues for about six weeks, when an alteration takes place, the dark-green, slimy coat being thrown off, leaving a small, buff-coloured caterpillar. The sawfly lays its eggs just below the upper surface of the Pear or Cherry leaves at the end of May or during June, therefore the appearance of the slug-worms should be watched for in early summer, especially where there has been a previous attack. Two or three applications of quicklime, at intervals of a day or two, will kill the slug-worms. A suitable solution for syringing infested trees is made by mixing 2 lbs. of soft soap and 1 peck of lime with 30 gallons of water. The slime-free caterpillars descend and enter the ground, spin a cocoon, and remain therein all the winter, and from these cocoons the sawfly emerges in the following early summer; to prevent or greatly reduce subsequent attacks the surface soil beneath infested trees should be removed during the winter and burned or deeply buried. If the soil is removed to the depth of 4 inches, and a similar amount of rich soil is put in its place, a double benefit will be bestowed upon the trees.

Shrivelled Nectarines: *K. C. H.* The shrivelled appearance of the Nectarine fruits may be due to an insufficiency of water at the roots of the tree, or to over-cropping. Disease was not apparent on either of the fruits received.

Trimming the Leaves of Leeks: *H. M. S.* Two advantages are obtained by shortening the leaves of Leeks just prior to planting. There is less flagging, and, as it is usual to place Leeks in holes or in deep trenches, if the leaves were allowed to remain their full length many would touch the ground and be drawn into the soil by worms, and they would also be liable to attack by slugs.

Communications Received.—A. B.—S. A.—S. J.—J. C. W.—J. W. F.—E. M—W. T.

THE
Gardeners' Chronicle
No. 1651.—SATURDAY, AUGUST 17, 1918.

CONTENTS.

ILLUSTRATIONS.

LIFE AND LETTERS OF SIR JOSEPH D. HOOKER.*

It has rarely [illegible] and never to [illegible] me so much pleasure [illegible] as Mr. Leonard Huxley's *Life and Letters of Sir J. D. Hooker*, and I cannot think of any biography except, perhaps, that of Charles Darwin which taken in conjunction with such a remarkable book of travels as *Hooker's Himalayan Journal* may do so much to foster, encourage and guide any young man with a love of natural history. The author, who has been fortunate in having had at his disposal a great number of letters both from and to Sir Joseph Hooker, most carefully chosen and arranged by Lady Hooker, says of Hooker in his preface that "the busier he was, the longer and fuller his letters were likely to be, and he was always busy. How busy and how hard working, no one who did not know him intimately can conceive nor they read this book. The first thing that strikes one in that part of it which describes Hooker's early life, is the immense help and encouragement and assistance he received from his father, himself an extremely able and hard working man. His home life and education at Glasgow seem to have been, from a modern educational point of view, somewhat hard and strenuous, and many of his associates in the Glasgow University were not of his own social class.

It is probable that there can be no better experience for a young man commencing life than service in the Navy under such a commander as Sir John Ross, who led the Antarctic expedition, and in whose cabin Hooker worked for four years. Though Hooker's conditions of service on board the *Erebus* were not so hard as those of Darwin, as he never suffered from sea-sickness, yet the long and dangerous struggle during the ice navigation in the worst climate of the world, continued through three successive seasons, seems to have not only hardened his constitution, which in youth was somewhat delicate, but to have removed the heart trouble from which he suffered in early life, and which, as he says in a letter to his grandfather (Vol. I., p. 104) affected him to such a degree that he could never stand up before his fellow-scholars at school or college without violent palpitation, and when attempting to take part in a debate at college, always caused him to sit down in shame and confusion, however carefully he had conned his speech. In later life he seems to have overcome this nervousness to a great degree, and at the historic meeting of the British Association at Oxford, when the Bishop of Oxford made an unfair attack on Darwin, Hooker supported Darwin and Huxley in a most vigorous and effective speech. But he always got up his public addresses most carefully, and was never willing to speak in public without preparation.

During the first week of his voyage to India in 1845 Hooker's natural tact, manners, and modesty attracted the attention and secured the friendship of Lord Dalhousie, who attached him to his personal staff and gave him most valuable support during his journeys in India.

Hooker suffered grievously in later life from the [illegible] apathy, and parsimony then, even more than now, shown by the majority of our Cabinet Ministers and high officials on scientific subjects. His struggles to obtain the more pittance necessary to publish the results of his Antarctic journeys, though backed by the influence of his father, are described at length, and finally culminated, after he became Director of Kew, in his historic fight with Ayrton, 1870-1872. In this contest Mr. Gladstone, to his prestige Ayrton was, did not show to advantage, and Hooker, backed by the almost unanimous voice of the whole scientific world, came triumphant, though sorely vexed at the time by an intolerable attempt to treat him as a mere clerk, and even without the common courtesy which [illegible] duties to his office. Hooker [illegible] and [illegible] and [illegible] character, and when his back was against the wall [illegible] "Better to drink [illegible] than not to fight." His determination and [illegible] and shown in every [illegible] the [illegible] Thomas [illegible] off [illegible] to his explorations in the Himalayas, which were carried [illegible] hard [illegible] difficulties that only those who know [illegible] India can fully [illegible] The [illegible] to Morocco in 1871 in company with Ball and Maw. Though very little is said in the *Journal* to [illegible] Maw's part of the expedition is evident from the account published by Ball in 1873 that the difficulties of the first ascent of the Great Atlas would not have been overcome if Hooker had not been of the party.

Hooker's writings cover a period of no less than 71 years, commencing in 1839, when he was 20 years old, with a description of three new mosses in his father's *Icones Plantarum*, and ending in 1911 with five papers on Balsams, a genus of plants which occupied his attention almost exclusively during the last few years of his life. He retained his powers of sight, and his skill with the pencil and microscope almost to the end; and I well remember during my last visit to his house at Sunningdale in 1903, showing him at his request the revised proof of the article on the Beech in *The Trees of Great Britain and Ireland*, in which he took great interest. He read it through carefully without saying a word, as was his habit, and when he had finished was good enough to express his hearty approval, adding that he had detected two slight typographical errors, which no one else had noticed. Many of his papers are of too technical a character to appeal to any but botanists, but a number of them might well be collected and reprinted for the benefit of those all over the world who must constantly have occasion to refer to them.

Hooker's work as Director of Kew is a subject which will appeal specially to readers of the *Gardeners' Chronicle*, and is not dealt with so fully in the *Life* as it might have been. Sir William Thiselton Dyer tells us, in his masterly obituary notice of his father-in-law (Proc. Roy. Soc., 1912 that Hooker's personal hobby was the development and extension of the Arboretum which had been commenced by his father, and that he spared no pains in enlisting the aid of correspondents abroad and at home in enriching it; nor was he less anxious to have the specimens correctly named and the often deplorable confusion in their nomenclature cleared up. In 1902 the number of hardy trees and shrubs in this Arboretum, unrivalled in the temperate region of the world, amounted to about 4,500, and the skill exercised by two such eminently capable superintendents as Nicholson and Bean, in planting, pruning, and supporting the trees, makes the Kew Arboretum a model to all private arboriculturists. Another most valuable piece of work at Kew, to which I find no reference in the book, is the scientific and practical training which was given to the numerous young gardeners who pass through Kew, and whose admirable work both in public and private establishments all over the world, as I can personally testify, gives Kew the right to be called the most efficient and successful school for gardeners that has ever existed. The *esprit de corps* of Kew men finds expression in the Kew Guild, now presided over by that most distinguished and successful veteran, my old and valued friend Mr. Gammie. Though Sir Joseph and his successor, Sir William Thiselton Dyer, may have seemed to the less energetic and capable amongst them at times to be hard masters to serve, yet both at Kew and afterwards, wherever they went, the young gardeners were supported and encouraged. It is to be hoped that this training, which is among the most valuable functions of Kew, may never be lost sight of nor fail to receive the support of the Department in which the men serve.

Though, as a collector in the field, both of herbarium specimens and seeds, Hooker was indefatigable, I do not think, from what I have seen of him at Kew, that he admired plants for their beauty, or took much interest in their cultural peculiarities. He was much happier and more at home in the herbarium than in the garden. As a cultivator of indoor plants, Sir Joseph had a weakness not uncommon amongst those who have not in their youth learned the gardener's art by personal practice. He knew so many of the plants in their native countries, that he did not realise that the attempt to imitate the natural conditions of exotic plants as regards soil, water and temperature often leads to failure; whereas the practical gardener has learned by experience that these conditions, even when he knows them fully, which he rarely does, cannot be reproduced. If his orders, given when going round the Ranges had always been carried out, the efforts would sometimes have been disastrous to the plants; *vide* Vol. II., p. 179, where a story, for which I believe I am myself responsible, is given on this subject.

The Herbarium at Kew, founded by Sir William Hooker as his private property, grew and prospered under his son's personal superintendence and influence in a way that all who have worked there will know. A student could always get all he wanted in the shape of books, specimens, help and advice, more quickly and more certainly than in any other herbarium which I have ever had occasion to visit. Its Director resisted vigorously the attempts which were made, first by Owen and more recently by others, to remove part of the Kew collections to the British Museum. He realised that the living plants could not be studied without constant reference to the herbarium; though perhaps he did not as fully realise what many botanists even now do not seem to act upon sufficiently, namely, that the problems of variation cannot be solved unless the botanist works in conjunction with the gardener, and tests by

* *Life and Letters of Sir J. D. Hooker.* By L. Huxley. (John Murray, London.)

cultivation from seed the limits of variation in nature, and the extent to which characters are modified by change of environment and by hybridisation.

"No better proof can be given of the extraordinary interest and pleasure which botany can give a man in his old age, provided he retains his sight and brain power as Hooker did, than the way in which he took up the critical study of the Balsams. His letters to Gamble, Duthie, Gage, and others show the intense pleasure which these plants gave him, and the extreme difficulty of making out their characters, even though (as he said) (Vol. II., p. 336): "Happily my eyes are as good as ever and my hand as steady." He also took immense pains in trying to cut down to the very inadequate limit of twenty pages in article on the Flora of India which he prepared for the Imperial Gazetteer at the request of the Governor General. He says in a letter to Capt. Gage (Loc. p. 399) "Excuse my growl. I do love Indian botany: I long to see another Griffith."

As to the part which he took during the prime of life in championing the doctrine of evolution on conjunction with Darwin, Huxley, and Asa Gray, who were perhaps his most intimate friends and valued correspondents, I will say nothing. The subject is too great and too deep for me, and it has been so fully dealt with by abler pens in the *Life* of Darwin and Huxley that the omission of any further allusion here is permissible, more particularly as Prof. Bower has devoted a chapter of the *Life and Letters* to Hooker's position is a botanist. Neither will I say anything of his work in Sikkim as a geographer or as a geologist, in both of which capacities he has, though professedly an amateur, been honoured by those who, like Freshfield and the officers of the Tibetan Expedition, have testified to the accuracy of his geological observations and of his map of Sikkim.

Hooker's attitude to the honour which he received in 1877, of the K.C.S.I., after he had refused to accept the K.C.B. or the K.C.M.G., is given in some detail in Chapter xxxiv. His scruples were overcome by what he calls "a very pretty letter" from Lord Salisbury, and in writing to Darwin he said: "I had always regarded the Star of India as the most honourable of such distinctions: it is very limited (to 60 K.C.S.I.'s), is never like K.C.B. given by favor or on personal considerations, and it has a flavor of hard work under difficulties, of obstacles overcome, and of brilliant deeds that is very attractive. Assuredly I would rather go down to posterity as one of the 'Star of India' than as the holder of any other dignity whatever that the Crown can offer."

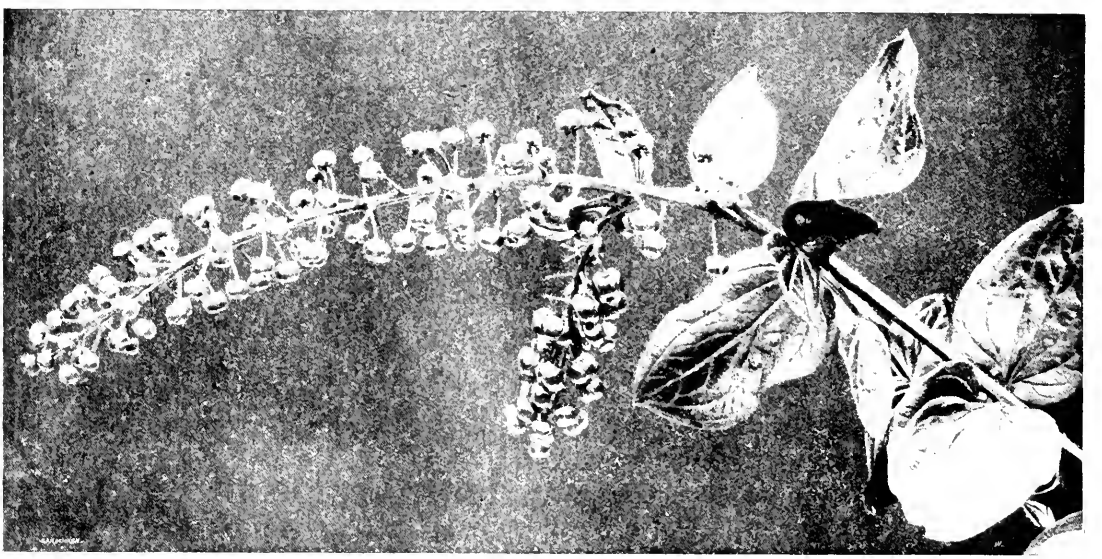
Hooker was fortunate in his two marriages, his first wife having been an exceptionally gifted woman who was able to help him greatly in his work. Lady Hooker, who survives him, has been of the greatest assistance to the author in furnishing him with materials and personal information, and the work she has done in this way is gratefully acknowledged by Mr. Huxley in his preface. *H. J. Thwes.*

TREES AND SHRUBS.

CORIARIA TERMINALIS.

When in fruit, Coriaria terminalis is a very graceful and attractive plant, especially the months of July and August. The individual blooms of this variety are larger than those of the type.

Another well-marked variety is rubens, which, like the preceding, was introduced from China by Mr. E. H. Wilson. When shown at the meeting of the Royal Horticultural Society on May 9, 1905, it was given an Award of Merit, but at the following meeting, on May 23, it received the higher honour of a First-class Certificate. The variety rubens differs so markedly from the type that some people consider it worthy of specific rank. In C. m. rubens the leaf stalks and young stems are heavily tinged with purple, and this colour occurs to a lesser degree in the foliage. The most prominent feature is, however, the flowers, which are somewhat later in expanding than those of the type, and of a beautiful rosy-red colour. In *Trees and Shrubs Hardy in the British Isles*, Mr. Bean refers to this Clematis as being probably the most beautiful climber distributed in the twentieth century. I do not suppose anyone will question this opinion, especially when the best form is considered, but individual plants do not appear to



[*Photograph by C. P. Raffill*

FIG. 22.—CORIARIA TERMINALIS: FRUITS GOLDEN-YELLOW.

form which produces racemes of yellow fruits. The species was introduced to England in 1897, but was collected in Sikkim nearly 50 years earlier by Sir Joseph Hooker. In the southern counties it is quite hardy, and flowers and fruits each year on the annual growths which rise from 3 feet to 4 feet high from the woody root stock. In the generally accepted sense of the word, Coriaria terminalis is not "shrubby," but its woody base brings it under that description. When fully developed, with their surrounding petals, the fruits may be almost half an inch across, consequently a finely grown and heavily fruited plant is invariably admired. The yellow fruited form is the older introduction; the black fruited variety was introduced by Mr. E. H. Wilson in 1908. *K.*

CLEMATIS MONTANA AND ITS VARIETIES.

Clematis montana, introduced from the Himalayas in 1831, is generally recognised as one of the most beautiful of spring-flowering climbers. It would be inappropriate to refer to the species at the present season were it not for the fact that the variety Wilsonii flowers during the be of equal merit. The same may be said of the type, of which a selected variety known as grandiflora is in cultivation, and, according to *Hortus Veitchii*, flowered first at Exeter in 1844.

All these varieties of Clematis montana, as well as the type, are vigorous climbers, and valuable for covering arbors, pergolas, and verandahs. They are also very effective when allowed to climb into a neighbouring tree from which the long, gracefully disposed shoots may droop in festoons. *W. T.*

PLATANUS ACERIFOLIA SUTTNERI.

The beauty of this tree is such that many are tempted to plant it after seeing a specimen in good condition, but more often than otherwise only small or young trees are to be seen. It is not nearly so vigorous as the ordinary form of the London Plane, as some leaves are wholly white, or nearly so; others are variously and extensively splashed with white, or the latter may be the ground colour, marked with spots, blotches or large patches of a dark green. I have seen a fine specimen, about 25 feet high, completely disfigured by the fungus Gloeosporium nervisequum. The green type is liable

to much injury from the same fungus, but this variegated form shows the effects most conspicuously when the white portions are turned brown. The finest tree of Platanus acerifolia Suttneri I have seen is in the grounds of Holland House, Kensington, where it stands 35 feet high, and is well furnished with branches and faultless, strikingly variegated foliage. Mr. Dixon, the gardener, is fond of trees and shrubs and tends a large collection on this fine old London estate. *J. F.*

ORCHID NOTES AND GLEANINGS.

CATTLEYA HARDYANA THE KNOWLE VARIETY.

IMPORTED originally as a natural hybrid between C. Warscewiczii and C. Dowiana where the first specimen of C. Hardyana shown by the late Geo. Hardy, Esq., was awarded a First-class Certificate at the Royal Horticultural Society's meeting on August 11, 1885. Since that time some thirty varieties have received awards at the hands of the Orchid Committee, some of which have been unnamed. The earlier varieties were dark and more or less approaching C. Warscewiczii, but later petalled forms have appeared among home-raised seedlings.

A splendid flower of C. H. The Knowle variety, one of the finest dark varieties we have seen, is sent by John Hardy, Esq., The Knowle, Malpas, Cheshire. The plant is from his collection of orchids and received a Certificate at a show of the Manchester and North of England Orchid Society five years ago. The flower sent is 6 inches across, the sepals and petals bright rosy-mauve with fine crimson ground colour showing through to form the veining and conspicuously on the midribs of the inner parts of the segments. The large crimped-edged lip is ruby-red with a purple shade, the colour being continued at the edges of the side lobes. The base of the lip is veined with chrome-yellow, and on each side are patches of lighter yellow.

LAELIOCATTLEYA CONTRAST.

THE first flower of this pretty new variety between L.-C. bella alba L. purpurata C. labiata and L.-C. Cassandra Rex L. purpurata C. Mossiæ is sent by the raisers Messrs. Sanders, of St. Albans. The flower inherits the good shape and substance of the Cattleya parents, and is free from the defective folding back of the petals seen in many hybrids derived from L. purpurata. The title of "Contrast" is well chosen as the effect of the richly coloured deep violet purple labellum, backed by the broad pure white sepals and petals, is very striking. Although the colouring of the lip presents, at first sight, a uniform shade, closer examination shows that the bright effect is produced by a mixture of dark ruby-red and violet.

MR. CARRINGTON LEY'S HYBRID POPPY.

MANY years ago the late Rev. C. Wolley Dod gave me a plant of this hybrid Poppy, whose parents are, I understand, Papaver orientale and P. rupifragum. It is a good perennial with smaller flowers than those of most of the other forms of P. orientale, and of a fairly good scarlet colour. The foliage is less vigorous than that of the Oriental Poppies, but otherwise the plants show little trace of descent from P. rupifragum. I do not know whether to consider it an advantage or not, but this Poppy does not produce seeds, whereas P. rupifragum, like some others of the race, seeds too freely, and reproduces itself so abundantly as to become a weed in some gardens. Mr. Carrington Ley's Poppy has never seeded with me; at least, it has not produced any perfect seeds, although it forms seed capsules. It grows about 3 feet high, and gives annually in May and June a succession of brilliant, cup-shaped flowers. *S. Arnott.*

THE ALPINE GARDEN.

CAMPANULA KOLENATIANA.

THE stately but extremely variable Campanula Kolenatiana, a native of the Caucasus, was figured on page 25 and 24 was shown by Messrs. R. Lynch and Sons, Ontwell, at the meeting of the Royal Horticultural Society held on June 18 last, when it was given an Award of Merit. It is of tufted habit, with ovate-lance leaves on slender stems 6 inches to 9 inches long. These, as well as the stems, are covered all over

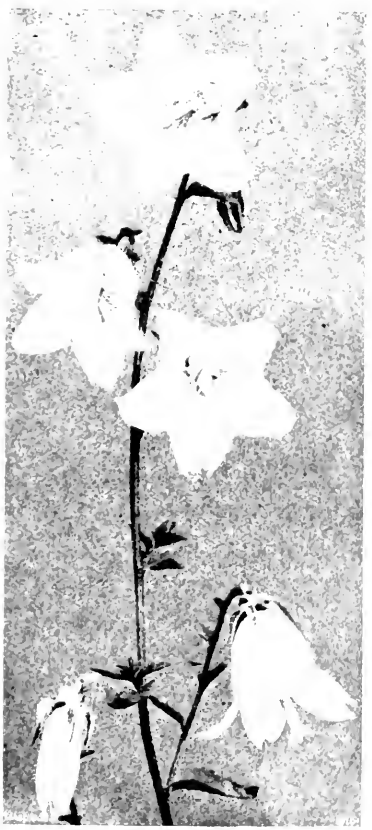


FIG. 25.—CAMPANULA KOLENATIANA: SHOWING PART OF AN INFLORESCENCE.

with short stiff hairs, which give an impression of roughness when handled. Numerous stems are produced and they grow about 1 foot high, bearing a few flowers, the lower being shortly stalked, while the upper ones are quite sessile. The branches from near the base upward, each branch bearing one or two large, purplish-blue flowers 1 inch in diameter. The flowers are pendent, with recurving lobes which have a deeper shade of colour. There is also a pale-flowered form in cultivation. C. kolenatiana is a native of the Caucasus, where it grows in rocky situations. Seeds were received from Tiflis Botanic Garden in 1910, and plants raised from them flowered in June of the following year. The species is a decided acquisition for the rock garden or border, as it grows freely in half-shady situations if planted in rich, light soil. Seeds are produced in abundance and germinate freely. C. Raddeana is a close ally, but is smaller in all its parts, has more numerous flowers, and is without the stiff hairs of C. kolenatiana. *W. I.*

CYANANTHUS LOBATUS.

FEW plants receive so much admiration as a well-grown specimen of Cyananthus lobatus. It is a Himalayan species, and one of the choicest Alpines we have for flowering late in the season. There can be no diversity of opinion as to the beauty of this Cyananthus. It forms a trailing mass of dainty foliage, with an abundance of large, blue flowers, which remind one of small flowers of Vinca minor.

C. lobatus often baffles the cultivator and losses of plants are too common during winter, when there appears to be a great risk of the fleshy roots decaying in cold, damp weather. On the other hand, excessive drought in summer and autumn cripples the plant seriously, and when this happens it may succumb in the winter months even where there is no excess of moisture. The most successful cultivators of C. lobatus grow it on a low terrace with a north-west exposure, sheltered from strong sunshine in summer. Leafmould, sand, a little loam, and a small quantity of peat provide a suitable compost for this species. The plants I have in mind were watered well in summer and early autumn, but in late October were covered with a sheet of glass to protect them from the rain and snow. *S. Arnott.*

ON INCREASED FOOD PRODUCTION.

ENDIVE.

FOR the summer autumn, and winter use, Endive is extremely useful. When well blanched it is one of the best flavoured salad plants we have, and at the same time it presents an appetising appearance on the table. For latest crops seed may still be sown, but the most important crop is obtained from a June sowing. The plants are usually planted out to succeed some crop for which the soil has been well prepared, such as Peas, Onions, or Potatos. A well-drained position should be chosen. The rows should be about 15 inches apart, and the plants 12 inches apart in the rows. When lifted from the seed-bed the seedlings may have their roots and foliage cut back about one-third of their length, as this makes planting easy, and the plants recover quickly.

There are several methods of blanching Endive; but the curled-leaf varieties I prefer to use an inverted pot over each plant. All light must be excluded to get the best results. Endive may also be covered by slates or mats, and have the tips of the leaves tied in to secure blanching; this latter is the easiest way, and for the round-leaved varieties I prefer it to other methods, as I think the flavour is improved thereby; but plant must be tied up only when they are dry and the weather is fine. The round-leaved varieties will afford an abundance of good salad plants until the end of October in the open, and to an allotment holder there is no more easily grown salad for autumn use. A succession should be maintained by tying sufficient plants when the weather is fit, each week, and allowing ten to fifteen days for blanching.

Where protection can be given, Endive may be had in good condition until the earliest Lettuces are fit to cut. If frames are available the plants should be lifted in October and placed fairly closely together in sandy soil, after removing any decaying foliage. If the weather is dry, a good watering will be beneficial. Frame treatment is similar for both curled and round-leaved varieties. Blanching in frames can be done by covering the plants with dry elm leaves three weeks before they are wanted for use, or by covering the lights with mats. *H. L. Lavender.*

THE MARKET FRUIT GARDEN.

THE drought was very effectually broken by the rainfall of July. Rain fell on sixteen days in my garden, though on three of them there was not enough to measure. During a brief thunderstorm on the 17th over half an inch of rain fell in less than half an hour, whilst a prolonged storm on the 20th gave 1.35 inch of rain. The total fall for the month was 3.95 inches, which is above the average. All vegetation has benefited greatly from the welcome moisture. Fruit trees have made a lot of growth—particularly noticeable in the secondary shoots on cordon Apples summer pruned at the end of May—and now present a very different appearance from that shown after the early summer plague of caterpillars. Trees then practically stripped of leaves are now refurnished and are making some progress. The rain came in time to assist the swelling of Plums, with the result that some extra fine samples of Early Rivers' and Czar have been sent to market. Late and even mid season Apples are also much improved in appearance, and now promise to be large and clean. Early varieties, on the other hand, were too far developed to benefit to any extent, and there are many "scrumps" (small, misshapen fruits) and "drops" amongst these. This has been very noticeable with Beauty of Bath, a variety always liable to drop badly. However, in a season of such scarcity, any Apple has a market value, and "scrumps" and "drops" have sold at higher prices than are often received for first rate samples.

REMARKABLE PRICES.

Before these words are in print the prices of Apples may have been officially controlled, but, at the time of writing, only a few common varieties of Plums (chiefly the Bush Plum, or Mogul, largely grown in Kent, and the Pershore, or Egg Plum) have been restricted. Meanwhile growers fortunate enough to have crops of early varieties of Apples and Plums have been enjoying a pleasant little harvest. A few of my Early Rivers' Plums realised the extraordinary price of 46s. gross per half bushel of 28 lbs., whilst the best Beauty of Bath Apples sold at 35s. per half-bushel of 20 lbs. Previously I have never sold Early Rivers' above 8s., and they have been as low as 1s. 9d., whilst Beauty of Bath has never been above 10s., and that was only in 1917. 2s. 6d. to 6s. being the range of prices before the war.

Such prices show in striking fashion the need of the public for fruit, for they have been willing to pay 2s. per lb. for Plums and 1s. 3d. per lb. for Apples retail. No doubt they were influenced by the fact that the Government commandeered most of the soft fruits, and by the prospect of the same thing happening soon in the case of Apples. But the great fact indicated by the high prices is the phenomenal scarcity of fruit, this probably being the most disastrous fruit season on record. Markets are exceptionally empty, and many orchards carry no fruit at all, so that the owners are unable to reap the benefit of the high prices—facts which should be remembered by those who are inclined to believe that growers are making a fortune in war-time. As a typical example of shortage I may mention my crop of Mr. Gladstone. Last year 29 of the oldest trees yielded 110 half bushels, or nearly four to a tree. This year the entire crop from these and many younger trees went to market in 9 half bushels.

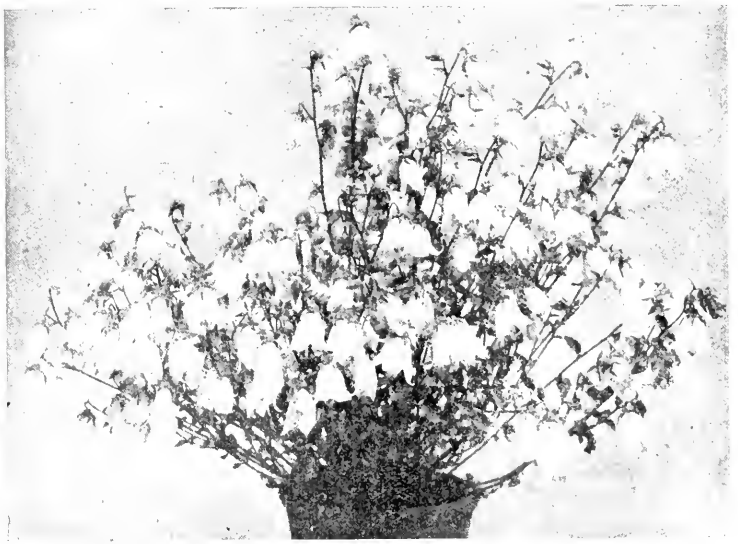


FIG. 24.—CAMPANULA KOLENATIANA.—FLOWERS PURPLISH BLUE.

(See p. 67.)

A GOOD EARLY APPLE.

One of the fairly modern varieties that has "made good" as a market Apple is Early Victoria. This is a large, green, cooking Apple which becomes big enough for market before the end of July, and it has the further merits of being very prolific and coming into bearing at an early age. I am confident that it is going to be a success here, where only a limited number of varieties thrive really well. The trees, half standards, presumably on Crab stock, were planted on some very poor, light land in the autumn of 1916. A note made at the time states: "Early Victoria very weak and covered with fruit-buds. Little chance for them, I fear." They now look thoroughly healthy and vigorous, and have borne a moderate crop in this, the second season after planting. The fruit would not have been allowed to develop had not the trees been making such strong growth at the same time. It was gathered on July 25, and sold well. Should this variety maintain its healthy character it will prove very valuable, for we need a big cooking Apple to market early. *Market Grower.*

The Week's Work.

THE KITCHEN GARDEN.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

WINTER ONIONS.—Now is a good time to sow seeds of this important crop. In many instances sowings are made too early, and much of the crop runs to seed in the next season; moderate-sized plants are the best for transplanting in the following spring. Tripoli Onions are often allowed more room than they really need: the rows may be sown 9 inches apart, and the seedlings, when transplanted in the spring, placed 6 inches apart in rows 12 inches apart. Red-skinned Onions have the best constitutions, and are not so liable as the white varieties to be attacked by mildew. On the other hand, white varieties are the earliest, and for this reason alone a few should be grown. No fresh manure should be used now, but a piece of good, open ground should be selected for the seed-bed. A good dressing of wood ashes should be given the ground, and soot ought always to be used freely, as it acts as a fertiliser, and prevents attacks by the Onion maggot. Giant Red Tripoli, Lemon Rocca, and White Leviathan are all good and reliable Onions, while the newer Autumn Triumph should certainly be given a trial for its excellent cropping and keeping qualities.

TOMATOS.—It is important that an early start should be made with the plants that are to produce fruit in quantity during the late autumn and winter months. Those placed in their permanent quarters much later than the present time may grow strongly, but refuse to flower or set fruits properly, and in any case it is the wisest course to be rather too early than late. Pot culture is best for winter supplies. A high temperature and moist atmosphere prove fatal to a good set, but if air is admitted freely, a buoyant atmosphere maintained in damp weather by the aid of fire-heat, and the flowers fertilised when the pollen is dry, a good set of fruits should result. A night temperature ranging from 55° to 60°, with an increase of 5° in the day-time, is ample for winter Tomatos. Plants in full bearing should be top-dressed with some approved fertiliser. Guard against a stagnant atmosphere, or disease is almost certain to make its appearance.

GENERAL INSTRUCTIONS.—As soon as Peas, early Potatos and other crops are over, clear away all haulm and other refuse. Where it is possible to have a fire all weeds and other rubbish should be burnt and the ash returned to the ground. Frequently stir the surface soil with the hoe between all growing crops, as nothing accelerates growth more than the admission of air to the roots. Attend to the early thinning of all winter crops, such as Turnips and Carrots, and continue to plant Savoys and other green crops for winter use, so that no plot of ground remains idle.

THE ORCHID HOUSES.

By J. COLLIER, Gardener to SIR JEREMIAH COLMAN, Bart., Gatton Park, Reigate.

CLEANING OPERATIONS.—At the present season, when very little repotting requires to be done, all the spare time should be devoted to cleaning the plants, pots, and houses. Cattleyas, Laelias, and other hybrids should have their leaves sponged, and any scale insects detected on the rhizomes removed by means of an insecticide applied carefully with a small, moderately stiff brush. This operation needs special care; much damage may easily be done by an inexperienced hand, which may not become apparent until later, when the rhizomes turn black and decay. Where insects are not present the plants should be merely sponged with a weak solution of soft soap, dissolved in tepid rain-water. The houses should be occasionally fumigated as a preventive measure. Periodical sprayings overhead with a solution of Quassia extract at the rate of half-a-pint to 5 gallons of

tepid rain-water will, in most cases, keep insects in check. Spraying should be done on fine afternoons, when evaporation is likely to be rapid and harm will not be caused by the Quassia-water remaining too long in the centre of the partly developed growths. The above treatment applies to all Orchids. At this season there are large numbers of young shoots, in various stages of development. Support should be given to any that are likely to bend over, by loosely tying them to small neat stakes, which may be removed after the growths have attained their proper size and strength.

Watering, Ventilation, and Heating.—Plants that are in full growth and well rooted into the compost require more liberal supplies of water at the roots just now than at any other period. This especially applies to such genera as Cypripedium, Calanthe, Phaius, Cymbidium, Vanda, and Angræcum. Although the atmosphere must be moist, a little ventilation should be allowed in the warmest houses in fine weather. The middle of August is a favourable time for the overhauling of the hot-water system, as fire-heat may be dispensed with for a few nights even in the warmest houses. During this time damping down should be reduced, the plants kept drier at the roots, and the blinds drawn up an hour or so earlier in the day than usual. The boilers and pipes should be emptied and cleared of all sediment. Thoroughly cleanse the flues and chimneys, and see that everything is put in working order ready for the winter season. Towards the end of the month a good many points, especially Odontoglossums, deserve quite exacting. Sufficient quantities of potting materials should be prepared ready for use.

THE FLOWER GARDEN.

By R. P. Brotherston, Gardener, and H. Lane, Haddington, Tyninghame, Lady L. Ho.

Roses.—Considerable attention will be required to keep Climbing and Rambler Roses tidy. Some of the latter have a tendency to throw new shoots at the base of the flower trusses, but all these should be cut out as soon as observed. The long, flowerless shoots of the previous year will require attention too, not only to tie them in where needed to fill spaces, but in thinning out to the right number. While as few ties as possible to save work later and the growths are rearranged. Roses that have finished flowering, such as Appe Bessons, should be pruned, or rather thinned, so that the trees are no longer burdened with useless growth.

Rock Garden. Interest in the rock garden is now on the wane. Now that less attention must be taken to preserve a good appearance the growth should be rigidly curbed, not by cutting in the offending plants with a knife, but by plucking pieces away by hand, so that no obtrusive trimness shall follow. Weeds should be removed while still small. Ground not fully covered with plant growth should be neatly mulched with very finely sifted soil enriched with soot or pigeon manure, or both. Thickly-matted plants should have portions removed here and there, and if the parts laid bare are filled with compost a better display of flowers will be secured next year. This advice applies to such plants as Hutchinsia, mossy Saxifragas, and others of similar growth. Autumn-flowering Cyclamens will be greatly assisted if a portion of the upper soil is removed and fresh material is added. Seeds may now be sown, and if young plants are kept in reserve be in no hurry to plant them until growth commences, and, as a rule, it is best to reserve them until they are quite strong before planting them in the rock garden.

FRUITS UNDER GLASS.

By W. J. Grigg, Gardener to Mrs. Dempster, Keele Hall, Newcastle, Staffordshire.

Peaches and Nectarines.—The trees in early houses have nearly finished their growth, except for a few shoots of breast-wood. These should be removed at once, as no advantage is gained by retaining wood that is not required for bearing fruit next year. When the trees are pruned the young shoots should be tied in from 4 to 6 inches apart, covering the branches at the base, in the case of older trees, as much as possible. The borders should be well watered once a fortnight, and the trees syringed every evening when the weather is warm. Make preparations for lifting any trees which are not in good condition, and give them fresh soil. In the case of very old-established or exhausted trees, commence this work before the leaves begin to fall; during the next few weeks the trees should quickly form new roots and take hold of the fresh soil before the cold weather sets in. No manure will be required at present, turfy loam is used, with a liberal sprinkling of mortar rubble or chalk and a little charcoal or wood ashes. Prepare the soil under an open shed; it is important that it be in a friable condition when rammed around the roots.

Trees in Mid-season Houses.—As soon as the last fruit is gathered from trees in mid-season houses the same procedure should be followed as advised for early houses in a previous calendar. Where the trees are confined to inside borders, be careful to see they do not lack moisture at the roots. Give trees that have carried heavy crops of fruit a good soaking of liquid manure, soot-water and lime-water, and, by way of a change, a light sprinkling of concentrated manure.

Late Crops. Expose the fruits on late trees to [illegible] the influence of the sun, as there is still plenty of time for colouring, and a little shade will assist [illegible] Do not thin [illegible] [illegible] suitable material without delay, but [illegible] the borders to become absolutely dry [illegible] Keep a [illegible] the trees, and [illegible] no longer required [illegible] gentle syringing [illegible] [illegible] Before the use of the syringe [illegible] fruits begin to [illegible] and afford [illegible] to extend the season is [illegible]

THE HARDY FRUIT GARDEN.

By [illegible] Head Gardener at Arisaig House, Arisaig, W.

Outdoor Fruiting Vines. Under favourable [illegible] especially if sheltered by [illegible] outdoor Grapes should now [illegible] quite ripe. Some amount of thinning [illegible] necessary, and care is [illegible] old [illegible] removed. It is only by [illegible] the vines [illegible] that good results can be obtained. [illegible] abundant growth, prevent any [illegible] foliage, and pinch the shoots at [illegible] beyond the bunch of fruit. It is a good plan to be on the safe side and always dust the vines with sulphur to guard against attacks of mildew. Newly planted vines or those not bearing a crop, should be encouraged to make strong, healthy growth; a few vigorous shoots are much to be preferred to many weak ones. Some of these growths, by ties so as to prevent any injury from storms. Unless they are in quite dry positions it will scarcely be necessary to water the vines, though those planted during the spring may need an occasional soaking.

Summer Raspberries and Loganberries.—As soon as the fruits have been picked and ready the old fruiting shoots. Reduce the young growths to the required number at the same time making them secure against any injury from winds. If a new stock of the Loganberry is desired peg the points or tips of the shoots into pots, plunged into the ground. This is an easy and ready method of propagation, and much to be preferred to division of the stools.

Rhubarb. Hitherto I have not referred to Rhubarb, because it is not a fruit, but as it is used in tarts and for preserves I may be pardoned for mentioning it. Rhubarb plantations have been drawn upon somewhat heavily this season, for obvious reasons, therefore the ground should be lightly forked over between the rows and then given a dressing of either sulphate of ammonia or Peruvian guano. Pulling should now cease, or the plants will be weakened.

PLANTS UNDER GLASS.

By E. Harriss, Gardener to Lady Wantage, Lockinge Park, Berkshire.

Abutilon Savitzii. This is a most useful plant for indoor decorations, and two or three batches may be profitably propagated every year. Insert the cuttings close to the sides of 5½ inch pots and plunge them in the propagating case in a hand-light, or on a Cucumber bed. The best of the old plants may be potted again to make large specimens.

Salvia.—Salvia grandiflora splendens requires abundance of water during the latter stages of growth, supplemented by some form of stimulant two or three times a week. An application of soot-water once a week is also helpful in giving good colour to the foliage. Examine the foliage carefully for red spider, and syringe the plants with an insecticide at the present. Salvia Patcheri is now growing freely, and stakes must be supplied to support the young growths. This beautiful Salvia is often spoilt by allowing too many growths to remain. If the growths are thinned to five or six on each plant very strong spikes of flowers will result. If the pots are not already plunged in ashes this should be done, as S. Patcheri may remain out of doors with advantage until the end of September.

Schizanthus. The first sowing of Schizanthus may be made now in boxes or pans filled with a light sandy compost. Sow the seeds thinly and lightly, and cover with fine soil. They will readily germinate in a cold frame, and it must be borne in mind that the plants resent coddling at any stage of their growth. They should be grown in a light, airy structure, near the roof glass. There are several beautiful types of S. hizanthus, but the large flowered hybrid S. Wisetonensis, and S. retusus, find most favour here for growing in pots.

Clarkia.—A small sowing of Clarkia elegans may be made now and treated as advised for Schizanthus. This plant is most useful for cutting; it must be grown under perfectly cool conditions.

THE APIARY

By Chloris.

Seasonable Hints. As the end of the honey season is in sight a good deal of care is requisite, for only by judicious manipulation can we avoid having left upon our hands a number of partly filled frames and sections. Partly filled sections are only fit for the extractor, as they are useless for sale. All drawn out combs, whether in shallow frame or sections, containing no honey, should be removed at once. It should be carefully made up into parcels and put away in readiness for the new season. The remaining sections should be closed, placing those needing least attention on the outside. The whole must be warmly wrapped up. One warning is essential in giving the above advice. Sometimes when filled sections are removed, and there is much interference, the colony, unless very strong, will, to the disgust of the beekeeper, carry all its stores below. At the same time, it is essential to take some risks if we are to secure the best results. Where the stocks are weak, unite two or more colonies to make strong stocks, and thus make sure of their going through the winter successfully, always supposing they have sufficient food and dry lives.

Driven Bees. In many villages bees are still kept in skeps or hive of some kind, and many are annually destroyed before the honey can be secured. Where driven bees can be obtained for the driving they will be found most valuable for joining to hives that are found to be short of bees. It will even repay a beekeeper to give a trifle for them. Often the driven bees are in such a state of terror that they will not fight, and those to which they are to be added, if fairly well smoked, will be in a like state. Take off all sections and drop the driven bees *en masse* on the top of the frames, having just removed all queens from the added bees, and drive them down with smoke. The inexpert beekeeper may let the bees run in by the entrance, taking care to keep them from clustering under the porch by using a quill or thin stick.

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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.*

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

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.*

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 61.5°.

ACTUAL TEMPERATURE:—

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, *Thursday*, August 15, 10 a.m., Bar. 30, temp. 69.5°. Weather Very bright.

Potato Spraying.

The next month will prove an anxious time for those responsible for the food supplies of this country—not because there is a prospect of shortage, but because the larger our harvests the less shall we be dependent on overseas supplies, the less will be the amount of money which we shall have to spend abroad, and the less the tonnage which will have to be employed in the transport of food. Those who are comfortably unaware of the vicissitudes of prospects which may overtake a crop are, perhaps, already reckoning on a bumper Potato yield corresponding to the largely increased area which has been planted this year. Nor can we but hope that this cheery optimism may be excused by results. The recent change from close, wet weather to bright sunshine is of happy occurrence, for it coincided with the very widespread incidence of outbreaks of Potato disease. Now, as all experienced gardeners know, late blight of Potatos—like diseases of parasitic origin generally—is a very hard thing to control if the weather is on the side of the disease, but is relatively easy of control if the weather is on the side of the Potato. Indeed, it is to this fact more than any other that the indifferent attitude to spraying exhibited by so many growers is to be ascribed. They know that if the weather conditions are auspicious blight is not likely to make serious headway; they also know that if the weather is adverse, spraying will have to be done thoroughly and often if it is to serve as a check to the disease. Nevertheless, in view of the large issues at stake, we would urge gardeners to take the lead in their several districts in encouraging that form of Potato insurance which we call spraying. A striking example of the potency of spraying is to be found at the present time in the Royal Horticultural Society's gardens at Wisley, and we commend this example to the officers of the Food Production Department, who are working so energetically in promoting the spraying of Potatos. The Potatos at Wisley have, we are informed, been sprayed twice already. After the first spraying weather conditions were unpropitious, and in spite of the spraying disease made its appearance. The second spraying has arrested the disease so absolutely that at the present moment it is not possible to find any trace of the live fungus. It might be argued that this result is to be ascribed, not to the Burgundy mixture, but to the sunshine. This, however, cannot be maintained, for in the neighbourhood of Wisley Potatos are to be found which have not been sprayed, and in which the disease is progressing in spite of the favourable turn which the weather has taken. It is not often that so clear a demonstration of the fact that spraying has the "casting vote" is to be seen, and we trust that those who are disposed to rely on fine weather saving them the trouble of spraying will lay this example to heart and undertake, in their own and in the national interest, this form of crop insurance.

FLOWERS AT THE WAR SHRINE IN HYDE PARK.—The War Shrine in Hyde Park has been amply furnished with flowers since its dedication early in the present month. Probably not fewer than 200 000 persons have contributed floral tributes, and some business men place flowers on the Shrine each day. A proposal is on foot to erect a permanent shrine in place of the wood and canvas erection which has created such general interest.

PROPOSED TAX ON FLOWERS AND PLANTS.—In the Report of the Select Committee on Luxury Duty we find a proposal to tax purchases of cut flowers amounting to more than 7s. 6d., and plants (including receptacle and its decoration), trees, shrubs and bulbs, when the purchase price of each exceeds 7s. 6d.

THE BLACKBERRY HARVEST.—The Board of Education is advising local education authorities to allow senior scholars three days' holiday during each of the next two or three weeks, if necessary, so that the children may assist in gathering Blackberries for the jam factories. All pickers will be paid, we understand, at the rate of 3d. per lb., and all fruits must be minus the central core as they would be if ripe.

POTASH FROM ALUNITE AND SEAWEED.—The subject of the production of potash is treated in Bulletin No. 415 of the United States Department of Agriculture. It appears that deposits of high-grade alunite have been discovered in Utah, containing a considerable quantity of potash. The present high freight rates militate against any extended scheme, but it is thought that in normal times potash might be profitably extracted from this source. Another probable source of this valuable manure is the abundant plant growth in the water of the Panama Canal, which has hitherto been considered an unmitigated nuisance on account of the hindrance it causes to shipping. Recent analysis has shown that this growth contains from 4 to 6 per cent. of pure potash, and it is proposed to put in hand an extensive scheme for clearing the canal and extracting the potash from the water-weeds.

ALLOTMENTS AT FULBOURNE.—The inhabitants of the little town of Fulbourne, in Cambridgeshire, are doing excellent work in food production. There are only 250 householders, but they hold 71 acres of allotments between them. Moreover, in addition to their allotments, 80 per cent. of the householders have good gardens, which are in the majority of cases extremely well cultivated. The town is to be congratulated on so good a record.

RAFFIA FOR FRUIT-TREE BUDDING.—Under arrangements with the War Office, a limited quantity of raffia has been placed at the disposal of the Food Production Department, to be used exclusively for fruit-tree budding purposes. Those in need of this material should forward at once particulars of their requirements to the Food Production Department, 72, Victoria Street, Westminster. Applicants should state the number of stocks to be budded, and give an undertaking that any material allocated will be used exclusively for fruit tree budding. Applications can be entertained from actual users only, and envelopes should be marked "Raffia, Room 39," in the top left hand corner in order to avoid delay.

RECORDS OF ATTACKS OF FUNGOID AND INSECT PESTS.—Everyone familiar with the cultivation of garden and field crops is aware that the national annual loss of food resulting from attacks of fungoid and insect pests is enormous. How great is the loss and to what extent it may be attributed to the various pests, no one can tell, because correct information on these important points is not forthcoming. We know the difficulty of obtaining reliable information is very great, but, surely, not insurmountable, when once the value of reliable statistics is understood, therefore we are glad to learn that an attempt is being made to obtain records. As a preliminary effort in the collection of statistics which will show (1) the loss in foodstuffs due to pests, (2) the monetary loss involved, (3) the most fruitful direction in which research in control methods might be carried out, and (4) the importance of the matter from the national point of view, a committee representing the Imperial Bureau of Entomology, the Association of Economic Biologists, and the Agricultural Education Association, has prepared an experimental scheme for the recording of the results of attacks of Potato Blight and Fruit Fly. As success depends on hearty co-operation we commend the scheme to our readers, many of whom we hope will apply for record sheets to Mr. F. O. MOSLEY, Laboratory of Plant Pathology, University College, Reading.

SORGHUM AS A SUGAR PLANT.—At the present time, when sugar is scarce, it is interesting to find in the current number of the *Revue Horticole* a reference to the researches of Messrs DANIEL BERTHELOT and RENÉ TRANNOY, who reported in June to the Academy of Science that juice extracted from the stem of the Sorghum (S. vulgare) can be crystallised, and that, when the plant is cut down and the tissues allowed to die, saccharin in appreciable quantities is obtained, in the form of glucose and levulose. It is the opinion of these scientists that the juice could usefully be employed in cooking, when other syrup is not to be obtained. Sorghum can be cultivated in the same climate and under the same conditions as Maize. We may add that in America certain varieties of Sorghum are already cultivated for forage, and for the sake of the saccharin in the stems.

Rose Golden Ophelia.—This Hybrid Tea Rose has been greatly admired wherever it has been exhibited, as it possesses beautiful form and attractive colouring. The light yellow blooms are borne on long, dark stems, and as the foliage is also dark the flowers, with their more deeply tinted buds, have a fine setting. Messrs. B. Cant and Sons were awarded a Gold Medal for this variety at the exhibition of the National Rose Society, held at Regent's Park on July 4, and an Award of Merit by the Royal Horticultural Society on April 9.

Pinus canariensis.—The first part of the *Kew Bulletin* for 1918 contains an illustrated article on the Canary Island Pine, by Mr. J. Hutchinson, who visited La Palma in 1913. One of the objects of this contribution to our knowledge of this valuable tree is to advocate its cultivation for timber in suitable districts of the Empire. Already it has been extensively planted in South Africa, where it succeeds admirably, and it is under trial in Australia and New Zealand. The *Bulletin* illustrations show this Pine growing in the ravines of La Palma. It is the most favourable conditions it attains very large dimensions, with a clean, straight trunk measuring as much as 6 feet in diameter. At the present time there still exists above the village of Vilaflor, to the south of the Peak of Teneriffe, a group of giants at an altitude of 7,400 feet. One of these, according to Dr. Perez, is about 160 feet high and 36 feet in circumference. The same number of the *Kew Bulletin* contains papers on Tagasaste and Gacia as fodder plants, and on Storrie's soil erosion.

A New Dye Material.—The United States Consul-General at Buenos Aires reports that a joint-stock company has been formed in Argentina for the exploitation of a new dye material "algarrobin," obtained from the wood of the Carob tree. Cerutti's Schipani and a factory has been established in the city of Santa Fe. The material is said to be giving good results. One local concern, the Sociedad Italo Americano, is said to be using 3,307 to 4,409 lbs. of algarrobin monthly, chiefly in dyeing khaki for Argentine military uniforms. It is also said that 661,139 lbs. of the product have been shipped to Italy and France, and that additional requests are being received.

London's Railway Station Gardens.—The directors of London Underground Railways encourage the horticultural tendencies of their employés in various ways, and one of these is the granting of prizes to those who provide the best floral displays on the stations they have charge of. The annual inspection of these station gardens took place recently, and first prizes were awarded to the station masters at Northfields and Boston Manor, Hounslow line, and second prizes to Acton Town and Walham Green, besides seven third and fourteen fourth prizes to other stations. The directors have granted £50 towards the prizes to be competed for at the Underground Railway Employés' Horticultural Exhibition at Hammersmith in September, and they have encouraged food production by the extension of allotments on their own land, and the provision of miniature orchards on the wide embankments on the Hounslow and Barrow lines.

Food for Poultry.—To insure an equitable distribution of the limited quantity of poultry food, and also to encourage the better strains of poultry, the Minister of Food, acting with the Board of Agriculture, is putting into operation two systems of rationing, as follows:—Scheme A. Rations of 4 ounces per day per bird will be provided for birds of the best utility breeds up to an aggregate amount of 50,000 tons of feeding stuffs for six months. Scheme B. The owners of other fowls, having hen birds hatched since January 1, 1918, and not receiving rations under Scheme A, will be able to obtain certificates entitling them to purchase up to an amount per head per day (which will be less than 4 ounces a day, to be fixed from time to time according to the quantity of foodstuffs available). The machinery employed under the two schemes will be similar to that set up for a general scheme of livestock rationing to come later—i.e., through the Feeding Stuffs Committees which have been set up throughout the kingdom. Sub-committees of five persons will be attached to each Feeding Stuffs Committee, nominated at meetings of poultry-keepers shortly to be held in every area. To make the committees as fully representative as possible, areas will be divided into five sections, each of which will be entitled to a representative. In order to obtain a special ration of 4 ounces (say half grain and half a mash in dry form—fowls will be classified into first grade and second grade breeding stock. To come within the first category fowls must be:—(*a*) Utility breeding stock for egg production or of high utility quality; (*b*) and of pure-bred stock; (*c*) the standard of health of the flock must be high; (*d*) for a period of at least two years the stock must have been bred to meet the above requirements; (*e*) the owner of the stock must undertake, in consideration of receiving preferential treatment, to supply the public with hatching eggs, day-old chicks, and older stock at a cost no greater than his 1917 charges; (*f*) selective breeding must have been practised in the flock. Stock to be included in the second grade must meet the requirements of (*a*), (*b*), (*c*), and (*d*), and the owner must comply with the condition (*e*). Although no thorough system of selecting the best females has been practised, if the best available males have been regularly used such stock will be worth preserving and should be included in this grade. Second grade birds will only receive rations after the requirements of the first grade have been satisfied. A certain proportion of the allotted foods will be reserved for the preservation of the best utility stocks of ducks, turkeys, and geese. Owners of poultry coming within these conditions must apply in due course on prescribed forms to the secretary of the Feeding Stuffs Committee for their area, and if their applications are accepted they will receive certificates entitling them to a certain amount of feeding stuffs through the retailer whom they have nominated, and with whom they must deposit their certificates.

"Cotton" from Seaweed.—It is stated that the Fukyo Fibre Laboratory has taken out a patent for a process, whereby a substitute for cotton may be manufactured from a seaweed called "Suzame," or "gomo gomo." This weed grows abundantly in Japan, where it has hitherto been known as a good fertilising material. In the process of manufacture the weed is boiled in ashy water, and then in water mixed with Rice bran; afterwards it is bleached.

Publications Received.—*Modern Fruit Growing.* By W. P. Seabrook. (London: The Lockwood Press.) Price 4s. 6d. net.—*Journal of the International Garden Club*, 2119-21, Green mount Avenue, Baltimore.

Fig. 25.—Rose Golden Ophelia.—Flowers of the golden yellow.

HOME CORRESPONDENCE.

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

Old Gardening Books.—I have been much interested in Miss Warner's note under this heading in the *Gardeners' Chronicle* (p. 57), and also, of course, in Mr. Payne's and Mr. Burnyeat's articles, of which it is the outcome. It is particularly interesting to note Miss Warner's reference to her list of gardening books up to 1900. I hope she will extend it to 1900. It has long been a wish of mine to compile a really comprehensive bibliography of gardening books. Of lists there are many, such as that in the Hon. Evelyn Cecil's *History of Gardening in England*, but all these lists fall far short of what I think is wanted. The model I have always had in my mind's eye is Bigmore and Wyman's *Bibliography of Printing*. For many years I have been in the habit of cutting out entries

in second-hand booksellers' catalogues relating to horticulture, and have always hoped at some time to get these into order; the task would not be a light one, and the pressure of urgent literary work, not only in this country but in the United States, has left me no leisure for years past. From time to time during the last twenty or thirty years, but frequently with long intervals, I have written a good deal on the literature of horticulture in *The Gardeners' Chronicle*, and hope to be permitted to do so in future. The subject is almost inexhaustible. I have had the good fortune to discover a good many rarities in the way of "unconsidered" literature, and only within the last few days I had the pleasure of buying the most extensive "Catalogue of Seeds and Roots" I have yet seen. It was printed for John Webb, seedsman, at the Acorn, in Bridge Street, Westminster, and extends to 78 pages quarto. It is undated, but from the typographical get-up I should place it at about 1750. Seedsmen's and nurserymen's catalogues are, of course, part and parcel of gardening literature, and such of them as have been preserved would fall within the scope of the bibliography which I have in my mind. Such a work might be undertaken on the co-operative lines which resulted in such a perfectly wonderful book of reference as the American Library Association's *Portrait Index*, 1906. *W. Roberts, King's Avenue, Clapham Park.*

KEEPING THE AIR OF THE FRUIT ROOM DRY.—However well constructed it may be, the conditions obtaining in the fruit store are often far from satisfactory. At times the atmosphere becomes unduly damp, and this is usually largely due to the "sweating" of the fruit after storage. The admission of air currents is a cure for the trouble, but draughts often bring with them great changes of temperature, which are harmful to the fruits. It has been discovered that the use of chloride of calcium plays an important part in keeping the air of the store dry. This salt has the property of absorbing a large quantity of atmospheric moisture (about double its own weight), and after a while it becomes completely liquid. If a sufficient quantity of the chloride of calcium is introduced the atmosphere in the store will remain in a relatively dry state. The best plan is to place the chloride of calcium in a slanting trough, over the lower edge of which the salt can flow as it liquefies. A vessel of some kind should be placed underneath to receive the liquid. The chloride of calcium should be renewed about every week. The liquid which is captured should be placed in an iron vessel over a fire, and as soon as all the moisture has been evaporated it may be used again and again. Quicklime answers a somewhat similar purpose, though this is not so good as the chloride of calcium. *S. Leonard Bastin, Bournemouth.*

THE APPLE CROP.—Cannot the general failure of the Apple crop be turned to some use? In my own small garden I have some twenty varieties of Apples. The trees are cordons and bush trees, all planted at about the same time, and all of about the same age. Some, albeit few, are bearing a full crop, some have from one third to half a crop, and some have failed. I suggest that if statistics of varieties which have succeeded or failed were compiled, some useful data on the subject of the most trustworthy varieties might be obtained. I know, of course, that there are many factors which have to be taken into consideration before any conclusion of value could be drawn from such data, but I have in mind the possibility that, nevertheless, the information gathered in a careful way, might show that certain varieties—not probably the best—are to be relied on, even in such seasons as this, for producing fruit. Someone once said that the bicycle he wanted was a hardy bicycle, which would stand a large amount of ill-usage. I think this is also true of fruit, and I at all events should prefer to plant serviceable varieties, which can withstand reasonable ill-usage on the part of the weather, rather than, say, the delicious Cox's Orange Pippin, which in my soil scabs with (or without) the least provocation, and is unreliable. *A. N.*

REMARKS ON THE CONDITION OF THE FRUIT CROPS.

(See Tables in *Gardeners' Chronicle* for August 3, p. 42.)

(*Continued from p.* 62.)

2.—ENGLAND, N.E.

DURHAM.—During the flowering period of Plums, Pears, and Apricots the weather was very unfavourable, and though there was a fine show of blossom, the fruits did not set. Apples also blossomed freely, but the flowers were eaten up by caterpillars. Black Currants, Red Currants, and Gooseberries gave poor crops of fruit, owing to the bad weather which prevailed when they were in flower. *Edward Tindale, Ravensworth Gardens, Gateshead.*

—— Early in the month of May the prospects were good for crops of Apples and Plums, but as the season advanced the weather became very dry and cold, the result being a bad set of fruit. The following varieties of Apples are, however, carrying good crops: Lord Suffield, Warner's King, Lord Grosvenor, Cellini, Gascoyne's Scarlet, and Lane's Prince Albert. Pears against walls bore little bloom; standards bloomed profusely, but did not set much fruit. All fruit trees have suffered severely with insect pests. Amongst bush fruits, Raspberries and Red Currants bore the heaviest crops. The soil is retentive, but we suffered severely from the late drought. *William Smith, Lambton Castle Gardens, Fence Houses.*

—— In the spring there were promises of bountiful crops of all fruits in this county, but a plague of caterpillars and other pests attacked the trees of Apples, Pears, Currants, and Gooseberries in many parts of the county. This considerably reduced the quantity of fruit, but what remains is good. Plums bear abundant crops. *John Smith, County Instructor in Horticulture, Hylton House, North Road, Durham.*

NORTHUMBERLAND.—Apple crops look well and promising. Lane's Prince Albert, Bramley's Seedling, Peasgood's Nonesuch, Lord Grosvenor, Lord Derby, and Domino are the best varieties. Pears, Plums, and Cherries bore very light crops, and in some places none at all. Strawberries yielded a good crop, but owing to the long continuance of dry weather, the plants suffered from want of rain. Black Currants, Red and White Currants, and Gooseberries bore splendid crops, and Raspberries were also good. The soil lies on gravel, and quickly dries up in hot weather. *J. Thomas, Bywell Hall Gardens, Stocksfield-on-Tyne.*

YORKS.—We had a good show of bloom, but owing to a depleted staff spraying was only partially done. In consequence, pests were abundant, and ruined the few fruits that escaped late frosts. The quality of Gooseberries was good, but there was only a small crop. Raspberries were plentiful, in spite of an attack of caterpillars. *J. G. Wilson, Chevet Park Gardens, Wakefield.*

—— The Apple, Pear, and Plum crops are very poor. Apple trees have been infested with the caterpillars of the winter moth, and with aphides. Pear trees, which carried exceptionally heavy crops last year, are this year very sparsely fruited. Plums flowered well, but owing to cold winds and drought at the time of blossoming they failed to set. Gooseberries, Strawberries, Red Currants and Raspberries have been satisfactory. Black Currants were a failure, owing to aphis attacks. On the whole, we are experiencing a very poor fruit season. *C. F. Fulford, North Riding Asylum, York.*

Though there was an abundance of Apple and Plum blossom there are very poor crops of fruit. In the case of the former, it is probably owing to the cold, sunless weather when the blossoms opened. Strawberries promised well, but the want of rain spoiled the crop. There are practically no Pears. Red Currants were very good, but Black Currants were a failure. The soil is heavy loam on a layer of clay, with red sand below. *Jas. E. Hathaway, Baldersby Park Gardens, Thirsk.*

—— Fruit trees generally have suffered severely in this district from drought, which has caused considerable loss of fruits. Caterpillars also did great damage. Very few Pear trees carried blossom this year. This district lies some 700 feet above sea level. The soil is a shallow, medium loam, resting on chalk. *Sidney Legg, Wurter Priory Gardens, York.*

—— The fruit crops are the lightest we have had for some years past. Pears, Apricots and Peaches flowered badly, and are yielding thin crops. Apples have suffered from the caterpillar plague, and Strawberries were badly affected by drought. Other crops are fairly satisfactory. *F. C. Puddle, Scampston Hall Gardens, Rillington.*

—— This is one of the worst fruit seasons I have experienced. Apples will be a very poor crop; in fact, in some orchards there is not an Apple to be seen. Pears are a complete failure. We have a heavy crop of Plums, especially Victorias, although they are very scarce in the district. The same remarks apply to Gooseberries, Raspberries and Red Currants. Black Currants were a failure. Strawberries looked promising, but, owing to the dry season, were soon over. *J. C. Sutton, Castle Howard Gardens, Welburn.*

3.—ENGLAND, E.

CAMBRIDGE.—Early in the season we had a good display of blossom on outdoor fruit trees, but continuous cold nights, followed by the long drought, destroyed all prospect of good Apple, Pear, or Plum crops. The soil here is light, with a chalky subsoil, and soon dries up. *B. Goodacre, Moulton Paddock Gardens, Newmarket.*

After a splendid show of blossom, the crops of Apples, Pears, and Plums were injured by a long spell of cold, east winds. The subsequent dry weather caused the few remaining Apples to drop off. Just as Strawberries were setting a very heavy rain and hail storm (3.72 inches in 2 hours) destroyed all prospects of a good crop, only late varieties escaping. *Arthur Sweet, Palace Gardens, Ely.*

(*To be continued.*)

ORMSKIRK POTATO TRIALS.

As our account of the Potato Trials conducted at Ormskirk (see p. 60) has created considerable interest and a desire for detailed information concerning the immunity, or otherwise, of varieties from Wart Disease, we have now the pleasure of publishing the following particulars:—

Over 300 lots were tested. Amongst first rather, up to the present the greatest difficulty has been experienced in obtaining suitable immune Potatos similar in shape and colour to such varieties as May Queen, Midlothian Early and Sharpe's Express, all of which are highly susceptible to "Black Scab" on infected land. There are signs, however, that these difficulties are about to be overcome.

FIRST EARLY VARIETIES.

Dargill Early.—A very promising white kidney which has proved itself immune up to the present; known in previous years as Gardiner's No. 1.

Resistant Snowdrop (W.K.).—The white-fleshed form of this old variety still refuses to be contaminated, while the yellow fleshed form is most susceptible.

In obtaining clean stocks the great safeguard is to cut every set and examine until a pure strain is obtained. Both the foregoing are fair croppers.

Edzell Blue, an old, Forfarshire, round variety, is perfectly immune, and although coloured is a good cropper and of excellent quality.

Sutton's A 1 (W.R.) is another early variety which has proved to be immune, but its crop-

ping powers are only moderate, and it has, in the opinion of many, the defect of being round and deep-eyed.

America (W.R.).—A promising Potato which may replace Epicure on infected soil.

Arran Rose.—A very distinct, coloured, round Potato; cropping and quality good.

SECOND EARLY VARIETIES.

King George (W.O.).—Undoubtedly the coming second early variety for infected soil, where a Potato of the British Queen type is desired. At present the quality is not first-rate, but this will possibly improve with time; good cropper.

Great Scot (W.R.).—A Potato of great merit; a heavy cropper, of good quality, and robust constitution.

The Ally (W.O.).—This was awarded a Gold Medal in the 1917 trials. It is one of the great Potatos of the future, possessing foliage of a distinctive grey colour; the quality is improving. It produced a crop of 16 tons per acre in experiments carried out by the Lancashire County Council.

Arran Comrade (W.O.).—Known as Seedling No. 38 in 1917, this is a Potato of considerable promise.

EARLY MAINCROP VARIETIES

In this section the varieties of the Abundance type are in the majority of cases most susceptible, but promising immune varieties such as Culdees Castle (W.O.) and Burnhouse Beauty (W.O.) may be mentioned as exceptions.

LATE MAINCROP VARIETIES.

The Lochar (W.R.).—A good keeper and a fair cropper; it must be considered as a useful variety until replaced by a better. The foliage is not so robust as might be desired.

Templar (W.R.).—A moderate cropper.

Majestic (W.R.).—A variety of great promise, of good quality, and a satisfactory cropper. This variety has several points to recommend it, such as shallow eyes and fine appearance.

Kerr's Pink (C.R.).—This variety, which was awarded a Gold Medal in 1916, still retains its popularity as a fine cropper, and is of good quality.

Rhodesia Dhu (W.R.).—A variety apparently possessing a robust constitution, with massive stems and broad green leaves, which are so very characteristic that the Potato stands out conspicuously in the trials this season.

Amongst a large number of seedlings undergoing the test for immunity the most promising are:—Seedling 139, A.I. (W.R.); late: Seedling 472, C/2 (W.R.); late: Seedling 142, 2/6, (W.R.); late: Seedling 172, 10/6 (W.R.); late: Bloomfield, W.O.; second early: Laing's Prolific, W.O.; second early.

The whole area on which the varieties are being tested has received the following dressing of manure per acre:—12 tons farmyard manure, 4 cwts. superphosphate, 1 cwt. sulphate of potash, and 1 cwt. sulphate of ammonia.

(W.R. = White Kidney; W.R. = White Round; W.O. = White Oval; C.R. = Coloured Round. Ens.

The very wide circle of people interested in Potato culture will appreciate the prominence given on p. 60 to "Ormskirk Potato Trials, 1918," and also the credit given to Mr. John Snell and the Ormskirk Potato Society for the way they have stuck to their work for the last six or seven years. The pioneer work done by Mr. G. T. Malthouse at the Harper Adams College should not be forgotten. I believe the prospects for the future of such an important work are very bright. A sub-station of the Institute of Agricultural Botany at Ormskirk for the study of Wart Disease in Potatos, as foreshadowed by Mr. Lawrence Weaver, will set the work in its proper perspective.

Your remark on p. 60 that "the conditions under which the trials are carried out do not enable the full cropping capabilities of the varieties to be ascertained" struck me, and many who were present at Ormskirk on the 30th and 31st ult. must have felt how true your statement is, and yet I have seen splendid crops in the workhouse grounds there. I have seen Golden Wonder yielding 10 tons to the acre and Kerr's Pink 12 tons or more. I think the drought must have told very severely, especially against all the early sorts this season, and I think it was unfortunate that the plants at the ends of most of the rows, which were the ones lifted, showed up so poorly. The land must be better cultivated, and Mr. Weaver must see that Mr. Snell has as much "muck" as he wants, and artificial manure to give them at least a 10 cwt. dressing.

The other day I had the pleasure of showing Messrs. Dobbie and Co.'s trials at Edinburgh to a party including such authorities as Mr. Chittenden, of the R.H.S., Mr. Taylor, Mr. Gough, Mr. M'Ilvee, and Mr. Wolf, of the Board of Agriculture. Many of the plants lifted gave 4 to 5 lbs. per root, and one of the party asked our grower what he manured with. The answer came in a dry, matter-of-fact way: "The usual 20 tons of dung and 10 cwts. of artificials." In a season like the present one the advisability of planting whole sets of fair size is most evident.

We shall all await with interest the final report of the Trials, when the whole of the rows have been lifted. It was gratifying to see previous years' results confirmed, so far as that was possible from the small quantities raised. Edzell Blue, Majestic, Kerr's Pink, Great Scot, King George, The Ally, and all the Abundance type showed no trace whatever of Wart Disease. Interest centred in the new sorts not yet on the market, such as Arran Comrade and Arran Comrade (second early). The last-named, raised by Mr. McKelvie, of Arran Chieftain, carried off the honours of the day, judging by the high opinion formed of it by every hand. H. Cuthbertson. *Dalmeny, Midlothian.*

SOCIETIES.

ROYAL HORTICULTURAL.

AUGUST 13.—Very few visitors and the hot day caused the Council to make the exhibition to-day the date of the London Show Drill Hall a quiet one, and things by no means the smallest to be seen.

The Floral Committee recommended six medal awards, but made no awards to novelties. The Fruit and Vegetable Committee made no awards, and the Orchid Committee granted only two medals and two Awards of Merit.

Floral Committee.

Present: Messrs. Henry B. May (in the chair), W. P. Thomson, Chas. E. Pearson, Chas. Dixon, Chas. E. Shea, H. J. Jones, J. W. Moorman, J. Jennings, J. F. M'Leod, Arthur Turner, W. Howe, J. Hudson, C. R. Fielder, G. Routhe, John Green, R. C. Notcutt, Sydney Morris, W. J. Bean, J. T. Bennett-Poe, Herbert Cowley, R. W. Wallace, W. G. Baker, E. H. Jenkins, E. A. Bowles, and Jas. Hudson.

INTERESTING PLANTS.

The principal feature of the meeting was an extensive display of finely grown Gladioli from Messrs. Kelway and Son. The range of colour seen in a series of about eight varieties and an aggregate of about 250 spikes was very wide. The most attractive varieties were Marshal Foch, orange-scarlet; Lt. Kelway, a soft orange-scarlet, form evidently derived from *S. primulinus*; Golden Fire, golden apricot; Golden Ray, soft apricot-yellow; and White Lady, white with pale yellow blotch.

Mr. G. Reuthe showed several very interesting plants, notably Gaultheria rupestris, with white berries; G. Veitchii, with blue berries; and Lonicera tibetica, with three leaves at each node, and a pair of small, rose-pink flowers arising from the axils of each leaf along the flowering portion of the slender shoots. Messrs. Robert Veitch and Sons exhibited fine blooms of the splendid Magnolia grandiflora Exmouth variety; flowering growths of Acacia falcata from out-of-doors in Exeter—an interesting, yellow, autumn-flowering species; heavy-trusted sprays of Viburnum rhytidophyllum, and flowering bunches of Eucryphia pinnatifida and Exothrina Cristi-galli. A very densely-flowered and brightly-coloured form of Statice incana, shown by Mr. F. G. Woop, Marsden Gardens, Ashtead, merited a Cultural Commendation.

GROUPS.

The following Medals were awarded:—*Silver Flora Medal* to Messrs. Kelway and Son for Gladioli; and to Messrs. H. B. May and Sons for Ferns. *Silver Banksian* to the Rev. J. H. Pemberton for Roses, and to Mr. G. Reuthe for Alpine plants and shrubs. *Bronze Flora* to Messrs. J. Cheal and Sons for Phloxes. *Bronze Banksian* to Mr. G. W. Miller for hardy flowers.

Orchid Committee.

Present: Sir Harry J. Veitch (in the chair), Messrs. Jas. O'Brien (hon. secretary), William Bolton, R. A. Rolfe, Frederick J. Hanbury, C. J. Lucas, Walter Cobb, Arthur Dye, W. H. Hatcher, J. Charlesworth, A. McBean, R. G. Thwaites, Stuart Low, Fred. Sander, and Chas. H. Curtis.

AWARD OF MERIT.

Cattleya Hesta alba (*C. Suzanne Hye de Crom* × *C. Warscewiczii Exon. M. Beyrodt*), from Messrs. Charlesworth and Co., Haywards Heath.—A pretty and distinct pure white flower, and the first albino to appear out of the batch, as the others, having the purple front to the lip as in the Warscewiczii parent, but varied in tint in the various forms. The variety now shown had pure white flowers with light chrome yellow disc to the lip.

Laelio-Cattleya Appam (*L.-C. Scylla* × *C. Dowiana aurea*), from Messrs. Charlesworth and Co.—A very brightly coloured hybrid, in colour approaching nearest to *L.-C. Cappei*, one of the parents of *L.-C. Scylla*, and in form to *C. Dowiana*, which enters a second time into its composition. The plant bore a spike of three well-formed flowers with deep golden-yellow sepals and petals and ruby-purple lip, having closely arranged orange-coloured lines from the base to the centre.

GROUPS.

Messrs. Charlesworth and Co. were awarded a Silver Flora Medal for a group in which were many forms of their Laelio-Cattleya Appam, the sepals and petals of the different forms varying from primrose-yellow to light orange, and the labellums from rose-purple to claret-red. One form, in the rich copper-red of its segments, gave distinct evidence of Laelia cinnabarina, one of its original ancestors.

Messrs. Stuart Low and Co., Jarvisbrook, Sussex, were awarded a Silver Flora Medal for an excellent group in which many specimens of their floriferous type of Cattleya Warscewiczii were the chief feature. Most of the spikes bore six to seven flowers each, and one had a spike of eight large, well-developed blooms. In the centre of the group was a fine specimen of Dendrobium elavatum with twenty spikes of rich yellow and maroon flowers.

Messrs. Sanders, St. Albans, showed Cattleya Hardyana Marshal Foch, a very handsome variety with pure white sepals and petals and a deep ruby-purple lip having gold lines from the base to the divided yellow disc.

Fruit and Vegetable Committee.

Present: Messrs. J. Cheal (in the chair), W. Poupart, J. W. Bates, W. H. Divers, George Woodward, G. P. Berry, J. C. Allgrove, A. Bullock, Owen Thomas, F. A. Bunyard, and the Rev. W. Wilks.

Sir A. Cory Wright (*per* Mr. J. Hamlin) showed two fruits of Melon King George; these had grown so closely together that eventually they became joined, though the attachment was very slight, not skin deep. Two early Apples, Duchess of Bedford and Premier, were brought up from the Wisley Gardens, but neither variety received official commendation.

TRADE NOTES.

ALLOTMENT HOLDERS AND THE SEED TRADE.

On behalf of the United Council of Seed Trade Associations, Mr. H. Morgan Veitch has sent us a copy of the following interesting correspondence which has recently passed between Mr. Weaver, of the Food Production Department, and himself:—

"Norfolk House, Norfolk Street, W.C. 2.
"August 8, 1918

"Lawrence Weaver, Esq.,
"72, Victoria Street, S.W. 1.

"Dear Sir,—You have possibly seen in the horticultural press a report of a discussion which you had with a deputation of the Lower Thames Valley Association of Allotment Societies. This report purports to give a summary of your remarks as they were reported in *The Surrey Comet*, and alleges that you stated you were prepared to allow Associations every facility for purchasing seed in bulk," and urged them to write to the Agricultural Wholesale Society, etc.

"I cannot help thinking that there must be a serious error in the report, as I understand this meeting was held at the time when you were going into the matter with a sub-committee of the Unit d Council of Seed Trade Associations, whose suggestions you considered worthy of adoption.

"As the matter is causing considerable unrest in the seed trade, and particularly in the retail branch, I should be much obliged if you would let me hear from you, at your earliest convenience, what is the true construction which should be placed on the report of your statement to the deputation from the allotment societies mentioned above. I think it would be well for me to publish your reply.—I am dear Sir, yours faithfully, "H. MORGAN VEITCH,
"Solicitor to the Council."

"Food Production Department,
72, Victoria Street, S.W. 1
"August, 1918.

"Dear Sir,—I am in receipt of your letter of yesterday. There seems to be a good deal of misunderstanding as to what took place at my interview with the representatives of Allotment Holders' Associations. I have not seen the report in *The Surrey Comet* to which you refer, but the extract you give suggests that it does not accurately represent what took place. The facts are these:—

"1. A deputation representing several Associations called on me and said that certain wholesale seed firms were unwilling to supply them with seeds at wholesale prices. They desired that the Board should compel them to do so.

"2. I replied that the Board had no power or desire to interfere in such matters, but that I would represent their wishes to the wholesale merchants who were members of the Food Production Department's Seed Advisory Committee.

"3. I said further that Associations of Allotment Holders affiliated with the Agricultural Organisation Society could purchase their requirements through the Agricultural Wholesale Society. In this I was merely stating a well-known fact.

"4. In the course I pointed out to a Sub-committee of the United Council of Seed Trade Associations which called upon me, that the Allotment Holders' Associations desired to deal with wholesale houses. I invited them to state the terms on which they would accept orders, and they gave me particulars of the terms which they intended to submit to their Council, for recommendation to members of the Seed Trade Associations as an economical method for overcoming the apparent deadlock.

"5. These terms I communicated to the Allotment Associations which had previously called upon me.

"In this matter the Food Production Department's function was to act as an intermediary between the United Council of Seed Trade Associations and the Allotment Holders' Associations.—Yours faithfully,

"LAWRENCE WEAVER.

"H. Morgan Veitch, Esq."

CROPS AND STOCK ON THE HOME FARM.

POULTRY FOR STOCK.

It is time to select birds of both sexes for next season's egg and chicken production. The pullets and cockerels should be separated, as they grow more sturdily when kept apart. Birds of either sex with crooked breast-bones, badly coloured legs for the variety, wry tails, defective combs, and wrong feather markings, should be separated from the selected birds. Pullets hatched at the end of March or early in April should lay in the autumn, but even with pullets of that age much depends upon the way in which they are managed. Choice of breed is important, but it is purely a matter of local circumstances and personal choice. A more important point is "strain," and this is a point which many poultry-keepers do not trouble about. Pure-bred fowls of any breed vary in their laying capacity, but if the best laying hens are selected a superior strain is obtained. A hen producing 200 eggs per year is a good layer, but a hen of the same breed may not lay more than half that number under the same conditions. Pullets bred from the superior strain are likely to be prolific layers. Every poultry-keeper can collect his own flock of poultry on these lines by the aid of trap-nests and selected hens, as a record can be kept of the number of eggs each hen lays during a year.

Even with a desirable selection of pullets the result may be nullified by neglect of cleanliness and by poor housing accommodation in the autumn and winter.

BASIC SLAG FOR WHEAT.

This artificial manure is fast becoming popular for cereals as well as for grass, and with the increase in motor power, fewer horses will be employed, and consequently less animal manure will be used. Under such conditions, artificials will be of necessity more employed. As the highest grade basic slag—42 per cent. soluble—is now unobtainable, the 30 per cent. grade will be in greater demand, and as only a limited quantity is available of any grade, supplies should be procured as soon as possible.

Stiff to medium loams, or gravel overlying a clay subsoil, and deficient in lime, would be improved by a dressing of basic slag, especially where Wheat is to be the next crop. Assuming that the field has been cleaned of weeds and cannot be given a dressing of farmyard manure, basic slag, applied evenly over the field, at the rate of 6 cwt. per acre, at the time of sowing the Wheat, would greatly assist the production of a full Wheat crop.

TRIFOLIUM INCARNATUM.

For horses and sheep this is a valuable food in May, June, and the early part of July. Early sowing is important, to enable the plant to make good progress before winter rains set in. The common method of culture is to select a clean piece of Wheat or Oat stubble, cultivate it thoroughly to remove as much of the stubble as possible, sow the seed at the rate of 20 lbs. per acre, well harrow it in, and roll the land firmly. Where the stubble is clean this method answers very well, especially if the cereal crop was a good one and the land is in good condition, but if not it is better to plough the land some 5 inches deep and thoroughly bury all weeds. Harrow the plot over once and dress with 6 cwt. of superphosphate per acre, then again harrow it twice to bury the superphosphate.

Trifolium needs a firm rooting medium, as it is liable to have its roots disturbed by frost when the soil is loose. The ground cannot be made too firm, therefore err on the side of firmness by harrowing and rolling well before sowing. If the soil is in good condition, 16 lbs. of seed will produce a good crop, but if the condition be less satisfactory, say, 20 lbs., as the plant will not tiller or bush under poor conditions. *E. Molyneux.*

Obituary.

THE LATE MATTHEW TODD, J.P.—By the death, in his 79th year, of Mr. Matthew Todd, J.P., at his residence Stoneybank, Musselburgh, on the 7th inst., one of the best-known members of the floral trade north of the Tweed has passed away. Mr. Todd was a Kilmarnock man, but by far the larger part of his lifetime was spent in Edinburgh, to which he migrated many years ago. For a number of years he represented the Lawson Seed and Nursery Co., Ltd., then under the management of the late Mr. Syme, and for over forty years he carried on the floral business of Messrs. Todd and Co. He was one of the original members of the Scottish Horticultural Association, on the Council of which he served altogether for about thirty years, and of which he was president in 1897 and 1898. He was also president of the Edinburgh and Leith Floral Trade Association for a term. A man of many parts and wide reading, Mr. Todd was also an effective speaker, and his services were frequently in request as a lecturer on floral art. He had been in bad health for some time, but the end came rather unexpectedly. He is survived by Mrs. Todd and a family of sons and daughters.

ANSWERS TO CORRESPONDENTS.

BEDEGUAR GALL ON WILD ROSE: *G. E.* The galls found so frequently at this season on the wild Dog-Rose are caused by a small insect named Rhodites rosae. The popular name of the moss-like production is the Bedeguar Gall: the specimen sent is a particularly fine one.

DISEASED ONIONS: *H. C. P.* The disease from which your Onions are suffering is Onion Sclerote (Sclerotinia bulborum), which is identical with the disease which sometimes does so much harm to Hyacinth bulbs. The first signs of attack are yellowish markings on the foliage in spring or early summer. The fungus works downwards, and subsequently produces the dark, blackish sclerotia which often disfigure the surface of the bulbs. Spraying with a potassium sulphide solution as soon as evidence of attack is seen will check the progress of the disease, but early spraying is necessary as a preventive measure. Do not grow Onions for two or three years to come on the site of the present bed.

NAMES OF PLANTS: *W. S.* Stachys lanata.—*R. S.* 1, Send when in flower; 2, Viburnum Opulus; 3, Spiræa Douglasii; 4, Rondeletia speciosa; 5, Asplenium Nidus; 6, Jasminum nudiflorum; 7, Weigela rosea.—*J. W. M.* 1, Melilotus officinalis; 2, probably Hieracium cerinthoides.

RIPE TOMATOS IN APRIL: *J. S.* To obtain ripe Tomatos in April it is necessary to raise plants from seeds sown during the third week in September. Winter the plants within a few inches of the roof-glass of a house in which a temperature ranging from 55° to 60°, according to the weather, can be maintained, the aim being to keep them from becoming drawn during the dull season. Pot the seedlings into 3-inch pots as soon as they are large enough, and from there into 5-inch pots before they become pot-bound and stunted. By this means good, strong plants should be ready for their final potting in January. Fruits of Frogmore Selected Tomato, produced by plants raised and treated in the manner described, secured a First-class Certificate for the variety on April 24, 1894, but many ripe fruits were gathered before that date. Very early Tomatos may be grown on plants raised from cuttings rooted in October. In order to make sure of an early crop it is necessary to pollinate the flowers.

RUST ON BEGONIAS: *A. T.* The rusty appearance of the Begonia leaves is due to the presence of a minute mite. Dip the affected plants in a nicotine mixture or dust the foliage while moist with tobacco powder. Some Ferns, Gloxinias, and Achimenes are liable to attacks, therefore if any of these plants are near the Begonias they should be similarly treated to prevent the spread of the pest.

Communications Received.—R. R. G.—J. K., Oswestry—S. B.—A.D.A. Assn.—H. A. S.—H. G.—S. A.—A. B.—J. C. W.—J. W. F.—L. R.—D. & W. C.—F. M. P.

THE
Gardeners' Chronicle
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CONTENTS.

ILLUSTRATIONS.

DOUBLE CROPPING IN THE LEA VALLEY.

THE third annual Report from the Experiment Station of the Lea Valley Nursery and Market Garden Industries Development Society contains a brief record of the experiment of double cropping with Potatos followed by Tomatos. The yield of Potatos under glass was from 5 to 7¾ tons per acre, and the yield of the successional Tomatos was 21 to 24 tons. In as much as the yield of Tomatos grown in adjoining houses, and not preceded by Potatos, was 35 to 40 tons, there was a loss of 12 tons of Tomatos to set off against the gain of 6 tons of Potatos. Even so, the food value of the Potato plus the Tomato crop was greater than that of the larger Tomato crop. The report does not give the date at which the Potatos—Eclipse, Sharpe's Express, Duke of York, and British Queen—were planted, nor that at which they were lifted.

The chief objection to using Tomato houses for early crops lies, of course, in the fact that to grow Tomatos in the remarkably successful way in which they are grown in the Lea Valley means labour in the houses practically all the year round. The crop remains in the ground a long time, and as soon as it is finished the houses have to be got ready for next year's crop. When the soil has to be sterilised, the length of time available for an additional crop is very short indeed. Moreover, delay in setting out the Tomatos may result, if the season turns out to be an early one, in no inconsiderable loss of the earlier and more valuable fruits.

It is not, therefore, surprising that experienced growers should be loth to add to their heavy work by additional cropping. That they did so in 1917 by growing Potatos, and in 1918 by growing also Lettuces and Radishes, is an indication of their open mindedness and patriotism. We hope they will continue the experiment, and we feel sure that if they do so by growing the catch crops already mentioned they are likely to find a good market for all they can produce. The shortage of fruit and the probability of a deficiency of jam make it desirable that the largest possible quantity of fresh vegetable food should be available early in the year. Many people look upon salads as mere luxuries. They are wrong. Vegetables, such as salads, eaten raw, contribute more to health than almost any other form of food. For man does not live by calories alone. He requires, if he is to retain his health, the natural preventive medicines which plants can provide. These natural medicines, known to the learned as anti scorbutic vitamines, are the agents which protect the human body from scurvy. If the food which is eaten lacks these substances, no matter how rich it may be in the body building and heat producing foods, malnutrition follows. Therefore every means should be taken, particularly at the present time, to provide, as a constituent of the nation's diet, a liberal allowance of fresh vegetables, and particularly of such salads as Lettuce. Cooking destroys some of the substances which protect the body against such diseases as scurvy, and the surest way to obtain a good dose of those medicines which Nature prepares for us is to use plenty of salads which can be eaten raw.

Persons with glasshouses, provided they can obtain fuel, will be doing a useful service to the community by growing during the winter large quantities of Lettuces of suitable kinds, such, for example, as Little Gott.

Whilst on this subject it is worth while reminding our readers that in dried Beans and Peas the anti scorbutic vitamines disappear, but that they reappear when the seeds are soaked for 18 hours. Since the soaking also makes the seeds more palatable, those who are setting aside a store of Dutch Brown or other Haricot Beans, or Peas, should not forget to insist that before the seeds are cooked they should be soaked in water for 18 hours, care being taken to prevent mould, &c., from developing by changing the water once or twice.

SPHAERALCEA.

The genus Sphaeralcea, consisting of about 25 species, belongs to the natural order Malvaceæ. Some confusion exists respecting the nomenclature of the various members of the genus, some being included by various authorities in the closely allied genera Malva, Malvastrum, and Nuttallia, among others. The majority are natives of North and South America, while some species are also found in South Africa. Of these probably only seven are in cultivation: S. acerifolia, S. ambigua, S. australis, S. bonariensis, S. miniata, S. Munroana, and S. pedata. They are nearly all of subshrubby habit, dwarf and erect, an exception being S. pedata, which is procumbent. Some species are quite hardy when planted in hot, dry positions, others require to be lifted and potted, or propagated by means of cuttings in autumn and kept in a frame during the winter.

S. acerifolia is a half hardy, shrubby plant growing about 4 feet high, with five lobed, cordate leaves, and terminal, compound spikes of rosy-purple flowers in July. It is best adapted to greenhouse culture, although it will survive the winter in sheltered situations. A native of North-Western America, it has been grown in gardens for over half a century.

S. ambigua (fig. 26).—This species was shown at the meeting of the Royal Horticultural Society on June 20, 1916, under the name of S. cæspitosa, by Sydney Morris, Esq., Earlham Hall, Norwich, and received an Award of Merit. S. cæspitosa is not a published name, and I have not learnt who affixed it to this plant, but comparison with herbarium specimens shows that it is undoubtedly S. ambigua, which is found in Southern California, Nevada, and Arizona. This plant was found by Sir Hugh Beevor growing in gravelly ground in Arizona; he collected seeds and gave some to Mr. Morris, who succeeded in raising plants, and states that the plant is quite hardy at Norwich. It is grown in a hot, dry place, and freely reproduces itself by means of self-sown seeds. It is a dwarf, shrubby plant growing from 1 foot to 3 feet high, with stems and leaves covered with a white, woolly tomentum, giving it a silvery appearance. The leaves are about 1 inch in diameter, some deeply divided into three segments, others deeply crenated only. The flowers, which have been described as coppery-red and reddish-orange, might more correctly be described as raw salmon in colour. They are borne in the axils of the leaves along nearly the whole length of the stems in great abundance during the summer months. In Gray's *Flora of North America* the colour of the flower is given as rose, but this is accounted for by the fact that the flowers of S. ambigua turn to a purplish rose shade when dried. This I have proved from experience.

S. australis. A compactly growing species 1 foot to 2 feet high, much branched, the stem and leaves being covered with a woolly tomentum, especially on the younger parts. The leaves are about 1½ inch long, ovate in outline, and deeply pinnately divided almost to the midrib into narrow lobes. The deep salmon-coloured flowers, 1 inch across, are produced one or two together in the axils of the leaves of terminal branches during the summer months. Plants of this species were received at Kew in 1913 from Capt. Savile Reid who raised them from seeds received from the Argentine Republic, of which country it is a native. It makes an attractive subject for a ledge in the rock garden, being quite hardy in a hot, dry situation.

S. bonariensis. Introduced from the same source as the above and at the same time, this plant bears rosy pink flowers in the axils of the leaves of terminal branches. Over 1 foot high, the much branched stems and three lobed ovate leaves are covered with a white, woolly tomentum. It is of more flexuous habit than *S. australis*, and the flowers are rather larger, but not so freely produced. It has proved hardy in a hot, dry place, and remains in flower for a long period.

S. miniata. This is an old garden plant which has been in cultivation over a century, having been introduced in the year 1793. It is, however, uncommon, and seldom seen in gardens. From 2 feet to 4 feet high, it makes a good, bushy plant, with stem and leaves covered with a woolly tomentum not so white as in species previously mentioned. The leaves are about 2 inches long, three lobed, with the middle lobe much longer than the others. The vermilion-red flowers, over 1 inch across, are axillary, in bunches, on long peduncles. It is only half hardy, and makes a good greenhouse plant. Its native country is the Argentine.

S. Munroana.—Two plants are met with under this name in gardens, the true plant, with erect stems 2 feet to 3 feet high, and a prostrate plant, which is really *S. pedata*. The stems and leaves are covered with short, woolly hairs, but are quite green. The leaves are nearly 2

inches long, three-lobed or rarely one being deeper than the others. The dark red sometimes orchid scarlet, flowers are produced all through the summer, one or two together, in the axils of the leaves along the greater part of the stem. Variously known as Malvastrum Munroanum and Malva Munroana, this plant has been in cultivation since the year 1826, and is quite hardy in hot, dry places in stony soil, where it spreads by means of underground stems. A native of Western North America.

S. peltata.—Also known as Malva Creana, this is a procumbent plant, with long, interlaced stems covered with stellate hairs, as also are the leaves. The latter are green, trilobed, with the lobes again divided or lobed. The purplish, rose-coloured flowers, 1 inch across, are produced in the axils of the leaves all along the stems during the whole of the summer months. It is not hardy, but cuttings root readily in the autumn, and these must be kept in a frame during the winter. When planted out in late spring the plants make rapid growth, and soon cover a large space. It is a good plant for a warm position in the rock garden, where it can hang over a ledge. *W. J.*

TREES AND SHRUBS.

MAACKIA AMURENSIS.

Though this cannot claim the handsome appearance of some of its showy members of the Pea family as the Laburnums and Robinias, but it flowers in July and August, long after they are past. A tree, about 10 feet high, in the grounds of Holland House, Kensington, is now quite conspicuous and effective in the distance, with its erect racemes of creamy-white flowers, the racemes being 5 inches to 5 inches long, and mostly nearly erect, thus surmounting the horizontal and drooping, pinnate leaves. This small tree blooms more or less every year. It is generally known as Cladrastis amurensis, but for botanical reasons, Mr. Bean, in his book of *Trees and Shrubs Hardy in the British Isles*, adopts Ruprecht's name of Maackia amurensis. Occasionally the base of the raceme is branched, but it is so dense as to resemble a spike in the distance. Though introduced in 1864, M. amurensis is far from being common in collections of trees and shrubs, but its late flowering recommends it. *J. F.*

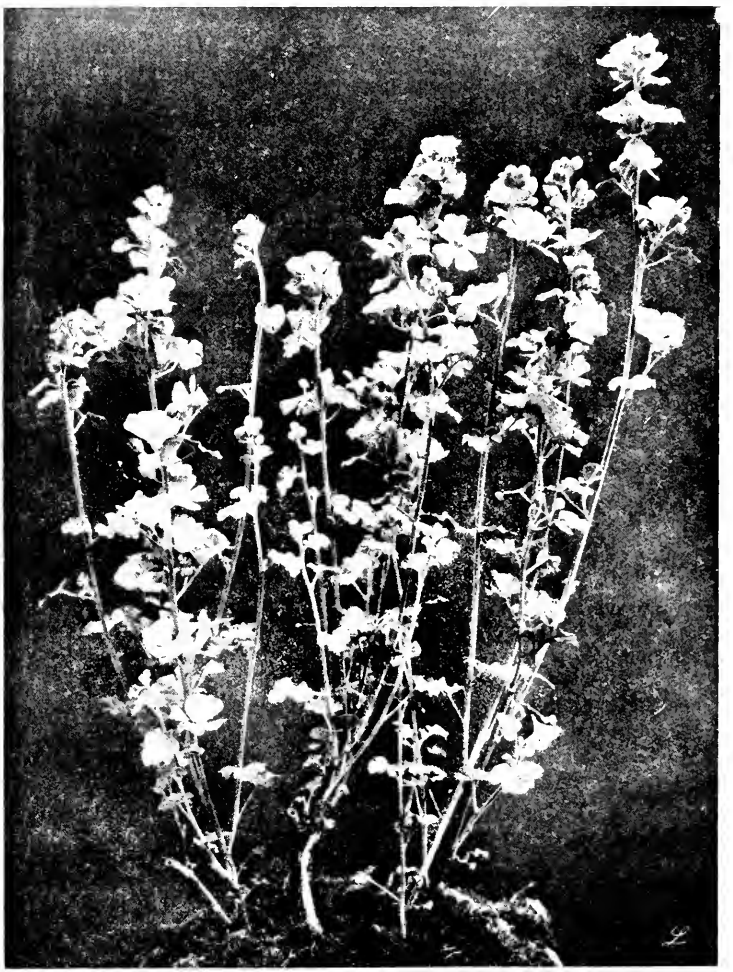


Fig. 26.—Sphæralcea ambigua: flowers raw salmon colour. (See p. 75.)

GAULTHERIA TRICHOPHYLLA.

Gaultheria trichophylla, to which an Award of Merit was granted by the Royal Horticultural Society on July 16 (see p. 28), is the dwarfest and possibly the choicest of the Partridge Berries. It is also, perhaps, the most difficult to cultivate, although in some places it appears to call for no special consideration such as it requires in the majority of gardens. It succeeds in a low, peaty position where it is below the level of the surrounding ground, but I have seen it growing satisfactorily planted with other peat-loving subjects in a slight depression at the base of a rock garden, where it receives the full advantage of all the rainfall and may be easily watered if this is necessary during a dry period.

G. trichophylla is a quite tiny Himalayan plant, with small, pinkish, or nearly white flowers, and hairy leaves, almost fur-like. This hairiness I believe accounts for some of the losses experienced during winter in our climate. The charm of G. trichophylla, however, does not consist so much in its flowers or foliage as in the berries. These are of a most brilliant blue, and larger than one would expect from such a plant. *S. Arnott.*

MAGNOLIA GRANDIFLORA AS A STANDARD.

Referring to the note on p. 63, a few years ago I saw in the Exeter nursery of Messrs. Robert Veitch and Son a large block of young standards of the Exmouth variety of Magnolia grandiflora in full bloom. These young specimens were from 4 feet to 5 feet high, and most of them bore several very large, fragrant blooms, making a memorable display. I have no doubt the blooms of this variety shown at the R.H.S. meeting on August 16 in the very interesting little collection of flowers from the open ground, were from some of these same plants. The type was also in flower, and I know that flowering standards of it are not uncommon around Exeter. Years ago, at Dropmore, Bucks, a standard Magnolia grandiflora produced occasional flowers, and probably would have bloomed more freely had it been in a sunnier position, for it was quite healthy. The "wind-dashed blooms" of February which *Amateur Gardener* saw at Falmouth were doubtless the rear-guard of the previous year's display, for at Pencarrow, in a much colder part of Cornwall, I was usually able to have a bloom to place indoors on Christmas Day, and still leave unopened buds on the wall-plant. Although the fruiting of Magnolia grandiflora is moderately frequent in the West of England, I have never seen ripe and fertile seeds produced in this country. *T. C. Bartlett.*

FRUIT TREE PESTS AND DISEASES.

My fruit trees are now practically free from insect pests, with the exception of American blight. The early attacks of caterpillars are over, and the rains seem to have washed away the aphides. Mention should be made of wasps, however, which are present in exceptionally large numbers this year, attacking Plums as soon as they ripen. Two large nests of tree wasps have been found in the orchards, and many of the ground nests of the common variety have been destroyed with cyanide of potassium.

Some of the fungous diseases are more prevalent than usual. Of these brown rot is the most serious. Very many Plums rot as they ripen, and Apples are attacked at quite an early stage. Prof. Salmon reports that this disease is general throughout Kent, where whole branches of Plum trees have been killed by it. Another disease common this year in my orchards is that known as "eye-rot." This is

a rot which starts at the eye of the Apple and spreads in a circular patch, spoiling the fruit for any purpose. It was first noticed here in 1916, and I do not think it is common. Apple scab made an early appearance on the foliage, and is now disfiguring the fruit of such varieties as are liable to it, notably Worcester Pearmain, Lord Grosvenor, and Allington Pippin, in spite of spraying once with lime-sulphur after the petals fell. Beauty of Bath, which used to be a very clean Apple here, is badly scabbed for the second year in succession, the disease causing cracks and distortion as well as the more characteristic spots.

American Blight.

Correspondents who have kindly responded to my request for experiences in the treatment of American Blight have supplied some very useful information. It is evident that there are several local remedies that can be brushed into the infested spots with good effect. Of those mentioned by correspondents creosote appeals most to me, on account of its cheapness and its power of penetration. I should have been rather afraid to use it, having been given to understand that it is so deadly to vegetation that plants will not thrive against a creosoted fence or in a creosoted frame. However, there can be little to fear in this respect, since Mr Bridgett affirms that he has employed it with success against American Blight for three years, and even with the addition of clay, as a dressing for dormant vines. I can corroborate Mr Bartlett's statement (p. 50) that this pest frequently attacks young shoots, and is therefore not wholly a wound parasite. There are several cases of it this season in my orchards, notably on Cox's Orange Pippin, Domino, and Early Julyan. In such cases local applications are almost impossible, if only because of the amount of ground to be covered, so spraying becomes desirable. Mr. Brotherston's success with Gishurst Compound (p. 28) is encouraging, and I have heard of other soapy washes being used with good effect. Evidently the solution has to be strong, and very thoroughly applied, for I have the pest badly on trees that were sprayed for other pests more than once, early in the season, with soft soap used at the rate of 1 oz. to 10 gallons of water (half the strength of Mr. Brotherston's Gishurst wash), in some cases with the addition of nicotine. Mr. Theobald states that the blight can be kept in check by winter spraying with the Woburn winter wash, or even with the common caustic soda spray. The latter was tried once on my trees without much success, but I shall try winter spraying again next winter. Unfortunately some of the insects are said to migrate to the roots during the winter, and these would escape. *Market Grower.*

NOTICES OF BOOKS.

Modern Fruit Growing.*

The man who wishes to embark on the growing of fruit for market finds himself in need of information on many points which naturally do not come within the scope of the many books on fruit culture written for the amateur or professional gardener. *Modern Fruit Growing* is intended to supply such information, and it fulfils its purpose admirably. The intending planter could hardly find a better guide. The author, though primarily a nurseryman, has been growing fruit for market for fourteen years, and his father for very much longer; and the advice he gives is obviously the outcome of practical experience. The chapters on the preparation and marking out of the land, the selection of varieties and stocks, pruning, manuring, and the general routine of the fruit farm, are thoroughly sound and practical. The cultivation of the orchard by horsed implements, a matter of great importance now that hand labour is so scarce and dear, is dealt with fully, and the author has some very original ideas on the subject which will well repay the attention of experienced growers. There is a useful chapter on spraying appliances, and another on the drying and bottling of fruits, whilst packing for market, orchard culture, and the storing of fruit receive attention. The subject of finance, which is frequently slurked, is dealt with candidly, actual returns for a number of years being given, together with an estimate of expenses. Mr Seabrook considers that to purchase bare arable land and plant it with trees and bushes requires a minimum capital of £125 per acre under present conditions, but that an early return may be expected from the planting of bush trained trees on dwarfing stocks with soft fruits between them. Experienced growers will find the book worth reading for its original ideas, though it is not expected that they will agree with all the author's statements and practice. *M. G.*

* *Modern Fruit Growing.* By W. P. Seabrook. Pp. 172, illustrated. (The Lockwood Press, 1, Mitre Court, London, E.C. 4.) Price 1s. 6d. net.

ORCHID NOTES AND GLEANINGS.

Lycaste Imschootiana.

Raised by Mr. Alfred van Imschoot, of Ghent, by crossing Lycaste Skinneri with L. cruenta, this hybrid was first shown at Brussels in 1905, and on December 12 of the same year it obtained an Award of Merit at the Royal Horticultural Society's meeting. The ground colour of the original flower was cream-white, tinged with pale buff yellow and spotted with light purple, but varieties subsequently flowered vary in tint and generally are of a lighter shade.

It is interesting to record a fine flower of a natural hybrid Lycaste from the collection of Samuel Gratrix, Esq., West Point, Whalley Range, Manchester, which agrees in every respect with the original Lycaste Imschootiana (p. 27), and plainly indicates that in some parts of Guatemala L. Skinneri and L. cruenta grow together, or near enough to admit of cross-fertilisation by insect aid. The flower sent is well represented by the illustration we give. The sepals are greenish-cream colour, with a yellow shading, and profusely spotted with light purple. The petals are similarly coloured, but show more yellow on the outer halves. The lip bears the deep maroon blotch at the base as seen in L. cruenta, but extended to the back of the yellow callus, which also bears some purple spots. The median part of the lip is yellow, shading to cream white towards the recurved apex. The column is yellow with a band of dark purple at the base.

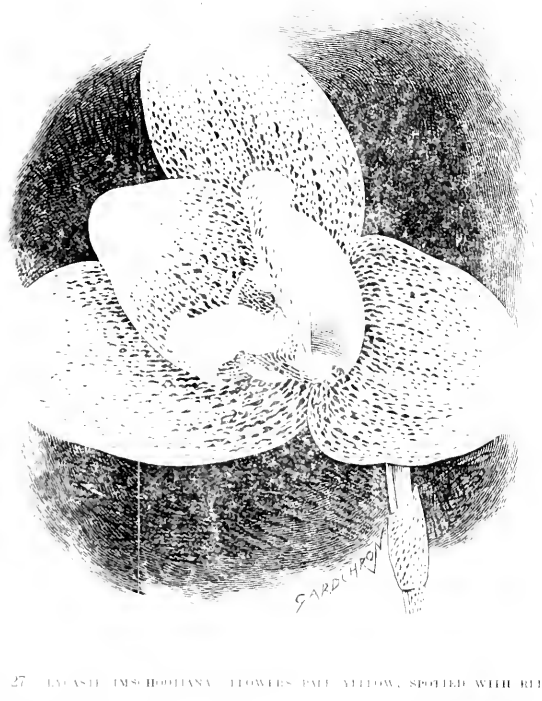


Fig. 27. Lycaste Imschootiana: flowers pale yellow, spotted with red.

BEGONIA PARVA.

Nearly all of the many species of Begonia have a triquetrous winged capsule, the exceptions being a small group of African species in which the capsule is fusiform (spindle-shaped). B. Mannii and B. prismatocarpa are two of these which have been cultivated in gardens for fifty years or more. Several others have been introduced in recent years from the Congo, B. parva (see fig. 28), having flowered in 1912 in the Botanical Garden at Brussels. B. Pogget is another species which we owe to the same garden. The flowers in both these species are produced in the leaf axils, females in threes in summer, males in clusters in late autumn and winter. The branch figured on p. 78 shows only male flowers. They are not particularly showy, their colour being dull rose-red, which is also the colour of B.

Manni. The ovary is about an inch long, pale brown and scabrid. Leaves somewhat coriaceous, smooth above, scabrid beneath. The stems are scandent, and the joints are apt to get leggy and, to a gardener's eye, unsightly. B. luxurians, a Brazilian species, is a handsome scandent plant with Hellebore-like leaves, and is quite useful for training up a pillar or against a blank wall. B. scandens, also Brazilian, is perhaps the only species with climbing stems that has become familiar in British gardens. W. H.

FIG. 26.—BEGONIA PARVA: A NEW SPECIES FROM THE CONGO; FLOWERS DULL ROSE-RED. (See p. 77).

The Week's Work.

THE KITCHEN GARDEN.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

Spring Cabbage.—Very poor land is not capable of producing good early Cabbages, but heavily manured, deeply dug, loose ground favours rank growth, which must be avoided, as it is unable to withstand severe weather in winter. No site is better for spring Cabbages than the space just cleared of Onions, as the ground is invariably well manured for this crop and will be sufficiently rich and firm to ensure sturdy and hardy growth. Having cleared off the Onions, and any weeds, the ground should have a good dressing of soot and lime worked into the surface with a fork or a Dutch hoe. At least two sowings should always be made, at intervals of a fortnight, as season and soil vary considerably, and it may happen that the earliest raised plants may grow too large to withstand the winter. Extra pains should be taken this season to raise as many plants as possible, as those not now required for planting can be left until the spring, when they will be useful. Plant spring Cabbages 15 inches apart each way, or place them at intervals of 12 inches in rows 18 inches apart.

Lettuce and Endive.—The main supply of Lettuces for early spring use should now be sown, and for this sowing few varieties are so good as Bath or Brown Cos. Some object to the colour of this variety, and prefer Hick's Hardy White, which is also an invaluable Lettuce for autumn sowing. Hardy Green Hammersmith is good and reliable. A small sowing of Early Paris Market and All the Year Round may be made, as these are often ready for use much earlier in spring. Plant Lettuces and Endive in frames for autumn and winter use, and make further sowings of Endive in cold frames.

Potatos.—Early Potatos have been splendid here this year, and the quality of all varieties is good—just the reverse of last year's experience. All early varieties still undug should be lifted on a dry day, and, after being dried, should be stored in small lots in a cool place, and covered so as to exclude light. Tubers required for seed may remain on the ground a few days to green; afterwards spread them thinly in a dry and well-ventilated but frost-proof shed.

PLANTS UNDER GLASS.

By E. HARRISS, Gardener to Lady WANTAGE, Lockinge Park, Berkshire.

Cyclamen.—Old corms which were saved and treated as advised in a previous calendar should now be shaken free from old soil and potted in 6-inch pots. A compost of good fibrous loam, leaf-soil, dried cow or sheep manure, and crushed brick rubble forms an excellent rooting medium. The drainage should consist largely of brick rubble, as the roots of Cyclamen quickly take hold of this material. When potted plunge the pots in ashes in a cold frame, and afford water with great care until new roots have formed.

Souvenir de la Malmaison Carnations.—When the layers are sufficiently well rooted they should be potted firmly in a compost of good fibrous loam, finely crushed brick rubble, wood ashes, and coarse sand. See that the pots are clean and efficiently drained. When potted, give a thorough soaking with water and place the batch in a cold frame. Shade them from bright sunshine for a few days and lightly spray the plants occasionally with rain-water.

Violets.—The propagation of a new stock of plants may be undertaken now, as there are plenty of young shoots suitable for cuttings on the old plants. Place a quantity of fine sandy soil in a cold shallow frame and make it fairly firm. In this insert the cuttings 3 or 4 inches apart, and water them well in. Keep the cuttings shaded from bright sunshine until they have rooted.

and spray them with rain-water twice daily. As soon as rooted they must be gradually hardened off, eventually dispensing with the lights until there is danger of frost. The frames may now be prepared for the plants which are to flower during the coming season. Chop up a quantity of loam and mix with it an equal quantity of leaf-mould: to each bushel add a 6-inch pot full of soot and the same quantity of wood ashes. Elevate the soil so that the plants are fairly close to the glass when planted. After planting, keep the frames almost closed for a few days and syringe the plants twice daily.

THE ORCHID HOUSES.

By J. COLLIER, Gardener to SIR JEREMIAH COLMAN, Bart., Gatton Park, Reigate.

Miltonia vexillaria.—Towards the end of the month, many plants of this species and its hybrids will have started well into growth, and at this stage they are very subject to the attacks of small yellow thrips, which hide themselves low down in the axils of the leaves. If these insects are not destroyed the plants will suffer serious injury, and the new growths permanently disfigured. When the pests are found to be present, each plant should be dipped in a solution of Quassia extract, the proportion being half a pint of extract to three gallons of tepid soft water. After they have been dipped, the plants should be laid on their sides to allow the liquid to drain from the leaves without coming into contact with the roots or compost, afterwards rinsing them in clean water. Any repotting necessary should be attended to at this stage. Small specimens and seedlings may be placed in larger pots without much root disturbance, but larger examples which show signs of deterioration should be pulled into several pieces. Cut away dead and useless back pseudo bulbs, leaving only two or three of the latter behind each growing point. Each portion should be placed in a separate receptacle; ordinary flower pots are suitable, and these should be furnished with clean crocks to about three parts their depth. Keep the base of the young growth on a level with the rim of the pot and work the potting material among the roots with moderate firmness. The compost may consist of Osmunda fibre or A1 fibre cut up rather short and freed from all the dusty particles, with a small quantity of chopped Sphagnum moss and crushed crocks. For the present, the plants may be given a position in the cool house, but when the nights become cooler they should be removed to an intermediate house. Water must be applied with great care until the roots extend over the edge of the pot, when the supply may be slightly increased. Shade from direct sunlight, and keep the surroundings moist.

Coelogyne cristata.—Plants of this species and its varieties are making rapid growth, and established specimens will need a copious supply of water at the roots. An occasional watering with a weak solution of liquid cow manure will also be beneficial. Plants which have been potted recently should be watered rather sparingly until the new roots have become established in the compost, and, during the first season after potting, they should be given clear water only.

THE FLOWER GARDEN.

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

The Mixed Border.—The autumnal display should now be perfect, and weekly attention will be needed to keep it in that condition for as long a period as possible. It may seem a waste of time to devote labour to this work every week. On the contrary, it is a saving of time, an hour or two sufficing to remove overgrown parts and faded flowers.

Tender Plants.—The propagation of Verbenas, Ageratums, and Heliotropes may now be effected. Some gardeners give the cuttings the benefit of a little bottom heat, in frames, but artificial heat is not essential. The cuttings should not be large, 2 inches in length being quite large enough, and these root more quickly than longer ones. The cuttings should never be allowed to flag, and if they cannot be handled quickly they should be immersed in water until they can be inserted in the cold frames. The latter must be kept close, damp, and shaded from sun until the cuttings have rooted, then air must be admitted in increasing amount until finally the sashes are drawn off altogether. Where Centaurea ragusina is increased from cuttings, I have found them do best when inserted singly in thumb-pots, placed in a frame ventilated a little night and day, and shaded. Penstemons and Calceolaria amplexicaulis may also be propagated now, and both succeed best when the soil is kept in a very moist condition. It is very important that neither should ever flag, as flagging delays rooting.

Pinks.—Pipings inserted in June should now be thoroughly well rooted, and no time should be lost in planting them in permanent positions. There is ample time for the plants to get established before winter, and if not well pressed down when planted, the soil should be firmly compressed around them in the course of a week or two. Firm soil is not only favourable to growth, for it prevents frost from lifting the plants out of the ground. The commoner varieties, such as Mrs. Sinkins and other border kinds, are easily increased by division.

Forget-me-Nots.—Self-sown seedlings should be transplanted, so that they may be strengthened for spring flowering. Myosotis dissitiflora should be divided, and if the weather and soil are dry, freely water the plants. There is a very pretty Anchusa almost like a Forget-me-Not, which may be divided now if stock is needed. I am not sure that it is quite hardy, but it is a beautiful associate for, though not so glorious as, Myosotidium nobile; its specific name is myosotidiflora.

THE HARDY FRUIT GARDEN.

By JAS. HUDSON, Head Gardener at Gunnersbury House, Acton, W.

Cloches for Late Strawberries. Where late Strawberries are grown it is a good plan to bring cloches into use at this period. These not only assist ripening, but the flavour of the fruits is improved by their use and the crop is safeguarded from birds. Second crops of Royal Sovereign are better finished by this means, and, as the foliage is not so dense now as in the early season, each plant can be conveniently covered by one cloche. A few weeks hence the Perpetual varieties will be greatly assisted if treated in a similar way. When cloches are used it is desirable to raise them slightly, so as to afford some amount of ventilation. Late Strawberries should be gathered rather under ripe than over ripe.

New Strawberry Beds. Make every effort to complete the planting of Strawberries by the end of the month. Runners are now growing freely, and will soon be ready for transplanting. If they are lifted with a fairly good ball of soil and roots they will soon establish themselves. When runners are not in the best condition, place them in three a few inches apart, so as to form small triangular groups. It may not be possible just yet to make new plantations, especially where the ground is heavily cropped, but sufficient runners may be removed and bedded a few inches apart, and watered as necessary until planting can be done. Try, however, to finish the new beds by the end of September.

Early Planted Strawberries.—Those who were fortunate enough to plant Strawberries early, as advised, will have no occasion to regret having made this effort. If the plants make runners, see that these are removed. Keep the ground well hoed between the plants, even if interlocping is being carried out with a vegetable crop, but make the ground firm around each plant before hoeing. I suggest that a trial be made with British Queen Strawberry by planting runners 6 inches apart in rows 2 feet apart.

Seedling Alpine Strawberries. We have at last succeeded in raising a fairly good batch of Alpine Strawberries, but the seedlings will be somewhat small to stand the winter. They will be bedded out until the spring, and then put into their fruiting quarters. Fortunately, we have a good stock of first runners from seedling plants for the earliest batch. These will be planted out this autumn in soil to which leaf-soil has been freely added. Our early beds have quite revived during the past few weeks, and the crop will be overlapping the autumn one. For the summer crop we do not net the beds, but for the autumn crop we do, or the birds would make too free with the fruits.

FRUITS UNDER GLASS.

By W. J. GUISE, Gardener to MRS. DEMPSTER, Keele Hall, Newcastle, Staffordshire.

Figs.—In a previous article I advised the thinning of Figs in various stages. It is a great temptation to leave all the largest and remove the smallest, but growers who have carried out instructions will now, and for a lengthened period, be gathering a regular succession of excellent Figs from the second crop in the early house. Although the late fruits are not quite so large as early ones, the crop is usually heavy. Daily syringings must now be discontinued, but should red spider be troublesome, the syringe may be used freely on bright mornings once or twice each week, directly all ripe fruits have been gathered. The paths, borders, and stems of the trees may still be syringed during the hottest part of the day, so that all moisture will have evaporated before evening. At this stage a little fire heat is advisable (especially during a spell of cold or wet weather), with a sufficient circulation of air to maintain a warm, buoyant atmosphere. Keep the shoots neatly tied in, and thin them where they are unduly crowded, to permit the ripening of the points that will carry the first crop next year. Keep the border fairly moist, and give an occasional watering with liquid manure directly after all ripe fruits have been gathered.

Late Figs.—The fruits in late houses are developing rapidly. Keep the shoots pinched and tied in to help the fruits and encourage the ripening of the young points. Should fine, hot weather continue, some of the young growths may ripen up a few fruits, but to attempt too much in this direction will keep the trees growing when the wood should be ripening. Moreover, it lessens the chance of securing a good supply of embryo fruits for next year. Abundant supplies of water will be necessary, even if the borders are mulched until the fruits commence to ripen.

Figs in Pots. Pot trees for early forcing that have recently been repotted should be encouraged to ripen their young growths directly they get well established in the new compost. Slightly reduce atmospheric moisture and the water supply, but not to the extent of causing premature ripening of the foliage. Gradually increase the ventilation, and eventually place the trees in the open air, near a wall facing south, there to remain until the end of September, to complete the ripening process. Keep the foliage free from red spider by occasional syringings of weak soot water. Late trees that have been top dressed and are now swelling up heavy crops of fruits will require liberal supplies of diluted liquid manure.

THE APIARY.

By CHLORIS

Extracting Honey. Honey should be left in the hive as long as possible, to ripen thoroughly. The only exception is in districts where Charlock or Mustard grows in abundance, for honey from these flowers soon granulates, and the sooner it is removed the better. If the weather shows signs of remaining cool it will be well to extract all the honey from the combs as soon as removed from the hives, but when the weather is excessively hot it will be an advantage to place the combs in a cool place for 24 hours before extracting the honey. Carry out the operation of extracting in the cool of the evening, to prevent the combs from breaking in the extractor, and so that no bees may collect. The cappings should be removed with as little honey as possible adhering to them, and the same evening placed in cheese-cloth to drain quite dry. Sections are best removed as soon as sealed or they will become stained.

EDITORIAL NOTICE.

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

Special Notice to Correspondents.—*The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.*

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

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

Letters for Publication, *as well as specimens of plants for naming, should be addressed to the* **EDITORS, 41, Wellington Street Covent Garden, London.** *Communications should be* WRITTEN ON ONE SIDE ONLY OF THE PAPER, *sent as early in the week as possible, and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.*

APPOINTMENTS FOR THE ENSUING WEEK.

TUESDAY, AUGUST 27—

Roy. Hort. Soc.'s, Comm. meet. Joint Comm. R.H.S. and Nat. Dahlia Soc. meet

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 60.5°.

ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, *Thursday*, August 22, 10 a.m., Bar. 30; temp. 80. Weather—Very bright.

The Hibernation of Potato Blight.

The problem of the recurrence year by year of Potato blight (Phytophthora infestans) has vexed the minds of men of science for the last 70 years almost as severely as the blight itself has vexed the minds of growers.

Many different explanations of the perennial nature of the disease have been propounded. The first—that put forward originally by Berkeley in 1846—maintained that the mycelium—that is, the thread-like body of the fungus—is perennial, and maintains itself in diseased tubers, spreading therefrom to the stems. This mode of accounting for the regular recrudescence of the disease was also held by de Bary, who, on the invitation of the Royal Agricultural Society, made a comprehensive investigation of the Potato disease. On the other hand, many investigators refused to be convinced, and put forward opinions, sometimes supported by evidence, tending to show that the fungus produces resting spores which, after remaining quiescent during winter, germinate and re-infest the Potato plant in the following summer. Some confirmation of this view is offered by the recent discovery that Phytophthora infestans, when grown in certain artificial media, produces bodies resembling oöspores, that is the resting spores, characteristic of the group of fungi to which late blight belongs. But in as much as these so-called resting spores have not been discovered in the Potato, the "resting-spore" theory cannot be held to be established. Other hypotheses, as, for example, that the mycelium perennates in the soil, or that the disease is latent in the Potato plant—whatever that may mean—need not be considered here, for they are based on no evidence derived from experiment or observation.

There is no need to insist on the great importance, from the practical point of view, of knowing the origin of our chief Potato trouble, hence it will interest our readers to learn that the most recent investigations appear to demonstrate beyond doubt that infected tubers used as seed serve as the source of origin of the disease in the field. The author of these investigations, Mr. Melhus, first satisfied himself by experiment that the fungus present in naturally infected tubers may gradually extend throughout the tuber, and may reach and infect the eyes so that the sprouts become diseased. The presence of the disease in the sprouts was demonstrated by cutting off the stems and keeping them for 24 hours in moist air, when the fungus produced its characteristic "fruits" or spores.

It was also shown that the spread of the fungus in the tubers and shoots is much more rapid when the sets are kept in moist sand than when they are kept in dry sand; a fact which points a moral no less important than evident that special attention should be paid to the proper drying off of seed tubers, and their clamping. Another noteworthy point is that the fungus spreads rapidly when the temperature of the sand is kept at 16° C. (61° F.), but that it spreads in the tubers little or not at all when the temperatur is kept at 1° to 6° C. (39-43° F.)

The next step in the investigation was to study the spread of the fungus from the tuber to the sprouts. Diseased tubers were planted in sterilised soil and kept at temperatures ranging in the different experiments from 15° C. to 27° C. All produced diseased sprouts. The sprouts of uninfected tubers planted among the diseased sets remained free from the fungus. Not only did the fungus spread from diseased tubers to the shoots arising therefrom, but it produced spores on those shoots, generally near their base. The places on the shoots where this tuber-infection occurred showed the usual and characteristic discoloration and blackening. In one case the fungus was found to spread from the infected shoot for a short distance into the soil, showing that when the conditions are especially favourable the fungus may live for a while in the soil. The early spread of the infection from diseased tubers to sprouts suffices to account for the fact that tubers infected with the disease fail to produce sturdy plants—they are, as it were, born diseased. Particularly notable is the fact that the disease breaks out on shoots from infected tubers below the ground level, so that such shoots which may serve as centres of infection remain dwarf, and readily escape observation. They may be regarded as the incubators of the disease, and the spores which they produce may only much later reveal their effects by an epidemic.

Mr. Melhus was able to show that shoots naturally infected from their tubers do actually produce crops of spores in the field. Experiments in the field also showed that spores produced from mycelium which invades the shoot from the tuber may be liberated, and, falling on neighbouring leaves, establish the disease in them. Further subsequent and extensive field experiments showed that the diseased shoots produced from infected "seed" served to set up an epidemic of the disease throughout the field. This demonstration of the diseased tuber as the starting point of epidemics provides a striking vindication of the garden practice of sprouting seed tubers and rejecting all those which make dwarfed and poorly developed shoots. By this practice risks of planting incubators of epidemics are reduced. In farm practice the problem is far less simple, and will require much more experimental work before it is solved. Nevertheless, it is clear that no care in harvesting and clamping seed Potatos can be too great. When the magnitude of the losses caused by late blight is considered, it will be evident that a few thousand pounds a year spent in systematic investigation would, if it brought forth a practical solution, be recovered many times over in one season.

* "Hibernation of Phytophthora infestans of the Irish Potato," by I. E. Melhus, *Journal of Agricultural Research*, Department of Agriculture, Washington, October 11, 1915, ., No. 2.

Allotments at Bristol.—The Brislington allotment movement had its inception in the Men's Adult School, and commenced with 9½ acres of land obtained through the Bristol Corporation under the Small Holdings and Allotment Act. From this small beginning the Association has grown to a membership of over 1,000 members, cultivating 75 acres of land. A further step in co-operation has been taken by the federation of twenty Bristol societies with 3,000 members.

New Seedling Dahlias.—The joint committee composed of members of the Floral Committee of the Royal Horticultural Society and National Dahlia Society, will meet at the London Scottish Drill Hall, Westminster, at 11 a.m. on August 27, September 24 and October 8, and on September 10, at 10.30 a.m., to consider the merits of any new Dahlias submitted. Awards by the joint committee will carry the A.M. of the R.H.S. and First-class Certificate of the N.D.S.

Fruit for Scottish Jam Makers.—A curious omission was found to exist in connection with the Order confining the supply of fruit in Scotland, unless in small quantities, to jam preservers, in connection with Food Control. Small makers of jam, such as small shopkeepers, were allowed a supply of sugar for jam making proportionate to the quantity they had manufactured in 1915. After the issue of the Order restricting the sale of fruit to licensed jam manufacturers, these small makers, who were not licensed, had difficulty in obtaining their supplies, and special permits had to be granted to enable them to do so.

The Price of Rhubarb Jam.—At a conference of the Food Control Committee of Dumfriesshire and Kirkcudbrightshire, and those of the Burghs of Dumfries and Maxwelltown, held in Dumfries the other day, attention was called to the great disparity between the price paid by neighbouring jam manufacturers for Rhubarb and the control retail price of Rhubarb jam. The Rhubarb was bought at the rate of 9d. per stone of 14 lbs., while the jam is sold retail at 11d. per lb. It was agreed to bring the subject before each of the local committees, and

already a protest has been made by the Maxwelltown Committee. The scarcity of other jam will cause a greater demand for that made from Rhubarb, and the manufacturer may respond extravagant prof

Trichinium Manglesii. A spike of blooms just received of this interesting Australian plant serves as a reminder that the species is suitable for cultivation in a cool greenhouse. Although introduced in 1656, it is by no means commonly met with in gardens, but a well-grown specimen is invariably admired. The spikes of bloom are very persistent, and present a curiously plumose combination of long white hairs and pink or whitish flowers.

Assisting Allotment Holders.—Although the Food Production Department is anxious, wherever possible, that would-be allotment holders should make their own friendly arrangements with the owners of land, its representatives are always ready to assist with advice in any case where difficulties may arise as to the amount of rent to be paid, or other matters. Last week, for instance, in Cheshire, a representative of the Department succeeded in obtaining a reduction of rent from £42 to £32 10s. for seven acres of land held by an Allotment Society. The Department has also been able to arrange for the continuance of tenancy in three instances where notice to quit had been served.

Land Settlement for ex-Service Men.—Recent statements in Parliament with reference to the importance of settling large numbers of soldiers and sailors on the land in this country at the end of the war, and the important recommendations of the Selborne Reconstruction Report, lend special interest to a pamphlet which is being published by the Central Land Association, of 50, Parliament Street, S.W. 1. The pamphlet, free copies of which can be obtained on application by anyone interested, sets out "a proposal for the establishment on a voluntary basis of a county scheme for the settlement of ex-service men on the land." Briefly, the Association proposes that landowners in the different counties should co-operate in providing facilities by which ex-service men can be enabled to obtain land near their own village on easy terms for occupation or purchase. The scheme is intended primarily for men who were agricultural labourers before joining the Forces, and it is claimed that the land problem so far as it concerns them can be handled better on voluntary methods on the lines by local men for local men than by any system of Government organisation. The scheme is set out in a very clear and interesting manner in the pamphlet, and seems likely to attract considerable attention among ex-service men, land reformers, and landowners. County committees are being formed, we understand, under the leadership of the Lords Lieutenant to develop and carry out the scheme.

Parasitic Fungi in Virgin Soil. Experiments in planting Potatos free from disease in virgin soil in Idaho, U.S.A., have shown that the tubers of the crop obtained were often infected with disease. It is therefore apparent that parasitic fungi capable of causing disease in the Potato occur in virgin soil. That this is the case has been demonstrated by Mr O. A. Pratt,* who has isolated from virgin soil three parasitic fungi—two species of Fusarium (F. radicicola and F. trichothecioides), and Rhizoctonia Solani. Further experiments indicate that disease-free Potatos are more likely to be produced on land previously cropped with Alfalfa, Clover, or grain than on virgin land.

A Historic Willow.—Lovers of historic trees will be sorry to learn that it has been found necessary to cut down the celebrated Willow which has stood for many years in the garden of the Spirale Bleue, Paris, and was stated on good authority to have been raised from a cutting of the weeping Napoleon's tomb at St. Helena. The *Revue Horticole*, of November 16, 1917, p. 371, gives an account of this tree, but in the current issue (July, 1918, p. 114) we are informed that the tree was lately found to be unsafe, and had to be destroyed. It was probably planted early in the 19th century by Philippe de Ségur, author of *L'Histoire de Napoléon et de la Grande Armée*, to whom the garden, later made public under its present name, formerly belonged.

Appearance of Onion Smut. Two instances have come to light to-day of the Board of Agriculture's advice young Onions have been attacked by Onion smut Urocystis cepulae, Frostt. This disease has hitherto been met with only once in the United Kingdom, though it is common in America, where it is apparently indigenous. According to Professor Duggar (*Fungous Diseases of Plants*, p. 382), "the host is most frequently shown the presence of the [illegible] precautions to prevent the disease establishing itself in this [illegible]. Young plants which appear to be infected should be carefully examined for any of the symptoms described, and suspicious specimens should be sent to the Secretary, Board of Agriculture and Fisheries, 4, Whitehall Place, London, S.W. 1, packed in a wooden or metal box, which should be labelled "Onion Disease." Directions for [illegible] will be sent at the pressure of the [illegible].

The Trapping of Wild Rabbits.—In many [illegible] districts gardeners are plagued with wild rabbits, and only those who have to manage extensive vegetable and fruit gardens fully understand the damage rabbits are capable of doing to crops, especially during the winter time. One or two methods of trapping rabbits are well known to all who have to do with country life, and now that rabbits have food value these will be used freely, but there are times and circumstances under which ordinary methods fail. To those who care to extend their knowledge of traps and snares we commend the article on "The Taking of Wild Rabbits," by Mr. R. Sharpe, in the

Fig. 24.—Trichinium Manglesii.—Spike of the most flowers past.

[illegible] the first leaf appears. Dusting the seed with [illegible] is also recommended, but these methods have been found to be unsatisfactory when the seed has been examined by the Board's officers, the disease appeared in its early stages as a mere spot or long blush streak, and this darkens in the more advanced stages. The affected part swells as the disease develops and eventually splits, disclosing a large quantity of black spores, like those of the well-known "Bunt" or stinking smut of Wheat. These spore balls are, according to Professor Duggar, washed into the soil if the diseased bulbs are not promptly removed, and the soil is unquestionably the chief source of the annual infection. The spores may also adhere to the surface of the seed, and it is possible that in this way it may have been introduced from America. As Onion Smut causes serious losses in the country of origin, and as it has been ascertained apparently beyond doubt that the spores may retain their capacity for germination in the soil for a period of twelve years, it is of the highest importance that English Onion growers should [illegible] Journal of the Board of Agriculture. Mr. Sharpe sets out in considerable detail the various methods to be employed and how and when to use them most effectively, and [illegible] instructions are accompanied by illustrations there should be no difficulty in following them.

War Item. Mr. James Douglas, gardener to the Rev. B. Douglas Duck, St. Mary's, New Abbey, Dumfries, is informed that his son John, twenty years of age, has been killed in action. This is the third son Mr. Douglas has lost in the war, and another is at present in hospital suffering from wounds.

Nasturtium Wilt. An interesting addition to the bacterial diseases of plants is that of a wilt of Nasturtiums (Tropaeolum majus), described by Mary K. Bryan.* The disease is caused by Bacterium solanacearum, an organism which also affects Potatos, Tomatos, and Tobacco. The disease prevents the blossoming of Nasturtiums, stunts their growth, and quickly kills them. By infection from Tobacco plants

* "Soil Fungi in Relation to Disease of the Irish Potato in Southern Idaho," *Journ. of Agric. Research*, XIII., 2, April 8, 1918.

* *Journ. of Agric. Research*, IV., 5.

suffering from wilt the disease was induced in the Nasturtium, and conversely the wilt of the latter inoculated into Tomato and Tobacco gave rise to the disease in Nasturtiums. Cultivated Ageratums and Verbenas also proved susceptible to wilt infection. This soil bacterium, B. solanacearum, is known to infect plants belonging to the Solanaceae, Compositae, Leguminosae Verbenaceae, Euphorbiaceae, Bignoniaceae, and Geraniaceae.

Oxfordshire School Gardens.—Mr. HEATON'S report to the Oxfordshire Education Committee shows that valuable work in food production has been carried out by the teachers and scholars of the county. Sixty school gardens are reported on, representing an area of 60 acres. The total number of school gardens is 104, and the number of boys and girls who have received instruction is 1,506 and 241 respectively. The value of the produce per acre, reckoned at market rates, is £100. The average yield of Potatos is claimed to have been 22 tons, a fact which will give satisfaction to all advocates of spade cultivation, and add force to Mr. PROTHERO'S apothegm, "God speed the spade." Experiments with "once grown" versus Lincolnshire and Scotch seed show, curiously enough, a slightly heavier yield from the home-grown. We suggest to Mr. HEATON that in continuing this trial next year he should include "twice grown" as well as once grown setts, for it is all important that the advantage of change of seed should be brought home to everyone. From Potato spraying experiments Mr. HEATON is inclined—prematurely as we think—to draw the conclusion that "it appears probable that it does not pay to spray in light soils, but on heavy loams the advantage seems to be worth the expense and labour." An excellent feature of the report is the reference to the teacher's records of pests which proved troublesome; they include Bean Weavils, Carrot Fly, Club-root, Gall Weevil, Onion Maggot and Mildew, Late Potato Blight, Pea Weevil, and Turnip Fly.

Australian Timbers.—Mr. R. T. BAKER, Curator of the Technological Museum, Sydney, N.S.W., is continuing his studies of the timber trees of Australia in the *Journal of the Proceedings of the Royal Society of New South Wales*. "Some Ironbarks of New South Wales" is the title of a recent illustrated paper. The author brings in the anatomical and chemical characters in his classification of the species. "The Ironbark," he says, "is one of the best known groups of trees in the Australian flora, and is especially famous for the hardness, weight, strength, and durability of its timber." Less than a dozen species are known, and they are principally confined to the middle portion of the coastal region of the east side of the continent. Most of the species are well defined. Mr. BAKER adduces as an example of the value of anatomical characters his separation of the different forms associated by writers under the name of Eucalyptus paniculata. These included four distinct woods, and the result of his investigations is the foundation of three new species, which he figures and describes in detail. Mr. BAKER also contributes a paper "On the Occurrence of Crystals in some Australian Timbers." Members of twenty-two families were examined, and of these, crystals were found to occur in the secondary wood of fifteen species, belonging to as many widely different families.

Publications Received.—***Insect Enemies of the Allotment Holder.*** By Fred. V. Theobald. (Wye Court, Wye, Kent.) Price 1s. 6d.—***Fruit Bottling and Preserving.*** By Mrs. Edwin Beckett. (London: *Country Life*, Ltd.) Price 9d. net.—***Bulletin of the Department of Agriculture, Trinidad and Tobago.*** Part 1, Vol. XVII. (Trinidad: Government Printing Office, Port of Spain.) Price 6d.

REMARKS ON THE CONDITION OF THE FRUIT CROPS.

(See Tables in *Gardeners' Chronicle* for August 3, p. 42.)

(*Continued from p.* 72.)

3. ENGLAND, E.

ESSEX. The fruit crop in this district is the smallest I have ever seen. There was a fairly good show of blossom, but owing to cold winds and drought, Apples and Pears are almost a failure in many parts. Plums, Cherries, and small fruits were not so bad, and there was about an average crop of Gooseberries and Red Currants, but Black Currants were very scarce, and Raspberries were dried up for want of rain. Strawberries were very good where well cultivated, but poor under less favourable conditions. *William Johnson, Stansted Hall Gardens, Stansted.*

—— This year's fruit crop is the most disappointing I ever remember. Apples and Plums gave promise of bearing heavy crops, but the warm weather in March on two days we registered 80° in the shade—followed by the arctic weather of April, were probably the chief causes of the failure. Caterpillars on Apple trees have been a worse scourge than ever. Pears bloomed fairly, but the crop is a very light one. Apricots, our best crop, had passed out of bloom before the heavy frosts of April set in. The soil is a strong, yellow clay. *Arthur Bullock, Copped Hall Gardens, Epping.*

HUNTINGDONSHIRE. — Apples are an average crop in these gardens, following a very heavy crop last year. Probably lack of shelter from the north-east wind, which was almost continuous during the flowering time, and neglect of spraying, accounts for much of the failure in this district. Caterpillars destroyed most of the fruits which set. Pear blossom was very scanty on nearly all varieties, and the crop is small. Plums and Cherries flowered well, but most of the flowers were imperfectly fertilised, and only a small proportion of the fruits swelled. Apricots and Peaches benefited by a few warm, sunny days whilst they were in bloom; the flowers set well, and crops were good. Less than half an inch of rain fell here during June, and though Strawberries were plentiful the fruits lacked size and juiciness. Black Currants dropped badly owing to the long drought. Gooseberries, Raspberries, and Red Currants stood the drought better, and bore heavy crops. The Fen soil is peaty over clay, and the high lands a stiff loam, generally also over clay. *A. F. Coombe, Ramsey Abbey Gardens.*

LINCOLNSHIRE.—Apples and Pears are giving very small crops. The only trees that are carrying even an average crop are those which were sprayed in April. Nearly all the Plums failed to set, and the early flowering varieties are the only trees carrying anything like a crop. Strawberries promised well; there was plenty of blossom, but the very dry, hot weather in June and early July checked the late varieties. *F. J. Foster, Grimsthorpe Castle Gardens, Bourne.*

NORFOLK. — Fruit trees of every description blossomed well, but owing to the cold weather they failed to set satisfactorily. Insect pests have been troublesome, and the want of rain has been unfavourable to the few fruits which remained on the trees. Our soil is very light, with a gravelly subsoil. *Isaiah Johnson, Catton House Gardens, Norwich.*

RUTLAND.—Apples, Pears, and Plums looked very promising in early spring, but the blight has completely ruined the trees for this season. *Joseph Robinson, Somerby Hall Gardens, Oakham.*

SUFFOLK.—Unfortunately, what promised to be a record crop of some kinds of fruits has proved to be quite the reverse, and the outlook is very disappointing. Some kinds of Apples in this locality are a total failure. The varieties Ecklinville Seedling and Blenheim Pippin have good crops. The soil being of a very light nature, the drought did much damage. Although the trees were sprayed, caterpillars and aphis were very troublesome. *E. R. Squelch, Manor House Gardens, Bury St. Edmunds.*

4. MIDLAND COUNTIES.

BEDFORDSHIRE.—There is a very poor crop of Apples in this neighbourhood, but what few fruits we have are of fair quality. There are practically no Pears, and very few Plums and Damsons. We had a very good show of bloom on all the trees. We had no frost to spoil the bloom, and I believe the short crop is due to cold, east winds during the blooming season, and also to a lack of bees. Strawberries and Raspberries should have given a good crop, but the long drought spoiled the prospect. *W. H. Neild, Woburn Experimental Fruit Farm, Ridgmont, Aspley Guise.*

—— The fruit crops generally in this district may be described as very poor. Strawberries were good, but the weather was too dry, and they were over very quickly. Plums, Apricots, Peaches, and Cherries set well, but the weather in the last week of April was arctic—in my opinion the worst week of the whole season—which accounts for the failure of these fruits. Apples were not expected to crop especially well, as last year they excelled themselves. Black Currants were fair. Red and White Currants were a failure owing to the trees being devastated by caterpillars. *Thos. W. Stanton, Hinwick Hall Gardens, near Wellingborough.*

BUCKINGHAMSHIRE. — This is a most disappointing season for fruit crops. The late spring frosts, snow, and hailstorms destroyed the greater part of all kinds of fruit tree blossom, and the subsequent drought completed the destruction of the Strawberry crop. Mildew and insect pests are rampant, and both Apple and Pear trees look extremely unhealthy. For want of skilled labour it has not been possible to deal properly with such conditions. Our soil is a heavy, retentive loam, resting on clay, and the natural drainage is bad. *W. Hedley Warren, Aston Clinton Gardens, Tring.*

—— Apple and Plum blossom was very plentiful, but the east and north-east winds did much damage to those flowers and young fruits which escaped the late frosts. Aphis attacks were very persistent. Hardly any Pear blossom developed. The drought during June was trying for Strawberry and Raspberry plants, but copious waterings were effective in securing heavy crops of well-flavoured fruit. *G. F. Johnson, Waddesdon Gardens, Aylesbury.*

—— The fruit crops in South Bucks are almost a failure. A cold spell during the time when Plums were in flower spoiled what otherwise might have been a good crop; the flowers were strong and there was plenty of pollen. Pears are almost a complete failure; a few varieties have a small crop of clean-looking fruits, e.g., Williams' Bon Chrétien, Beurré d'Anjou, President d'Osmanville, and Marguerite Marillat. Apples are perhaps the best crop, and Grenadier and Lord Grosvenor are carrying heavy crops, but late culinary varieties are scarce. Aphis is very prevalent and difficult to destroy. *Chas. Page, Dropmore Gardens, Maidenhead.*

CHESHIRE.—The Apple trees without exception showed plenty of bloom, but very few fruits set, and the crop is the lightest for a number of years, except for a few young trees that were planted in February, 1917, and these are carrying a good average crop. Pear trees showed very little bloom, and the crop may be regarded as a complete failure. Plums were laden with bloom, but there are few fruits. This is probably due to inclement weather when the trees were in bloom, following a mild winter, and to the infertility of the pollen. Most

of our Apple and Pear trees are about 15 years planted, on a fairly light soil, the base of which is sandstone, and at an elevation of 100 feet above sea level, well exposed, and mid-way between the Cheshire and Derbyshire hills. *N. F. Barnes, Eaton Gardens, Chester.*

—— Early in the season there was a prospect of good crops, but severe frosts and keen, cold winds during the flowering period of Apples, Pears and Plums, prevented them from setting their fruits. With the above exceptions, we have fairly satisfactory crops. All kinds of insect pests have been very troublesome, especially the Apple maggot. *Charles Flack, Cholmondeley Castle Gardens, Malpas.*

—— This year's fruit crop is the worst we have had for many years. The cold, damp nights, together with the morning frosts of April and May, contributed largely to bring about this unsatisfactory state of things. *Alfred N. Jones, Marbury Hall Gardens, Northwich.*

DERBYSHIRE.—Taken generally, hard and soft fruits are under the average crop here. There are few Pears. Apples and bush fruits suffered from north-east winds just when the Apples were flowering; some trees were a blaze of bloom, but only a fair crop set. The soil is medium loam with a clay subsoil. *F. G. Mills, Lonvside Home Farm, Glossop.*

—— Our Apple trees were rendered leafless by a plague of caterpillars. The trees have made new growth, but there seems little prospect of a crop, even next year. The Damson crop is very poor. *E. Wilson, Hardwick Hall Gardens, Chesterfield.*

HERTFORDSHIRE.—The fruit crops generally are the most unsatisfactory experienced during my period at Aldenham. Apples promised well; the majority of the trees flowered profusely, but the individual flowers were poor, opened late, and failed to set. Plums likewise flowered abundantly, but severe snow-storms at that period accounted for their failing to set. Pears, on the contrary, showed very little flower, and the crop is a complete failure. The long continued spell of drought has had a serious effect on the fruit trees generally, and in spite of thorough spraying they are badly infested with caterpillars, aphides, and American Blight. Many of the small fruits dried up. Apricots and Peaches, on the contrary, are good. There are heavy crops, and the trees are wonderfully clean; there is no sign of leaf curl on the Peaches and Nectarines. Our soil is stiff London clay. *Edwin Beckett, Aldenham House Gardens, Elstree.*

To be continued.

HOME CORRESPONDENCE.

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

Preserving Eggs and Fruits.—The method which you record on p. 61 of preserving fruits by immersing them in very hot water recalls the fact that, many years ago, before waterglass was commonly known, my mother always preserved hens' eggs during the early summer for winter use by a similar process. They were placed in a Potato-net and immersed in quite boiling water for a moment, then wrapped separately in paper and placed in a box of clean, dry sawdust until required. By this means the eggs kept quite good throughout the winter, indeed, they were so good that it was difficult to distinguish between the preserved and newly-laid eggs. The principle in each case seems to be the same—the closing of the air-spaces in the epidermis—only with the eggs it was effective for a longer period. *A. C. Barlott.*

"Rogues" Among Potatos.—I have just been re-perusing your account of Mr. Cuthbertson's lecture on "Potato Growing, Spraying, Lifting, and Storing," in your issue of June 29, 1918, p. 261. He says: "When growth is sufficiently developed it is possible to detect the 'rogues,' or plants not true to name, by the difference in the foliage or the colour of the flowers. Such rogues should be marked with a bamboo cane for removal." What, then, after removal? These "rogues" are usually very inconsiderately treated, for some of them are entirely new sorts, produced from the tuber itself, without seed-bearing, and deserve better treatment than common consumption. They should be grown separately, to see if they show any advance on known sorts. The Potato, like many other plants, has the power to produce new sorts vegetatively apart from seed. *S. Jackson, Arley, Port Hill, Shrewsbury.*

Vegetarians and Food Control.—It has generally been recognised that the arrangements made by the Food Controller regarding the distribution of meat and fats have pressed hardly upon those who, either from principle or for other reasons, are unable to avail themselves of the meat rations allowed to the public. This hardship has been intensified by the additional quantity of bacon made available. As the regulations have hitherto stood, a vegetarian could only receive a fat ration of 4 (or lately 5) ounces of butter or margarine. Under a doctor's certificate he might obtain an additional quantity of butter or margarine, but this was not supposed to be granted except for certain specified diseases. In consequence, most vegetarians were compelled to be satisfied with a very small quantity of fats, and complaints were made regarding this. By a lately issued Meat Rationing Order (M.G.R.M. 53), an attempt has been made to meet the complaints, but it must be said that it is not a successful one. Under it an adult surrenders his meat card and receives in exchange authority for one extra fat ration for the week. The same Order contains instructions regarding Jews, who do not eat bacon, and who have only to surrender two bacon coupons out of their four meat ones to secure an additional allowance of fats. This is an example of the many anomalies which still exist in connection with food rationing, which has, on the whole, been fairly planned. It seems to be a case in which vegetarians should make their voices heard in order that their needs should be fairly met. (*Vegetarian for Health Reasons.*

SOCIETIES.

ROYAL HORTICULTURAL.

Scientific Committee.

JULY 30. *Present:* Mr. E. A. Bowles, M.A., V.M.H. (in the chair), Messrs. J. W. Odell, F. M. Holmes, W. Fawcett, J. T. Bennett-Poe, W. C. Worsdell, J. Fraser, and F. J. Chittenden (hon. sec.).

Specimen of a Newt.—Mr. Bowles showed a case of tetal-tors on the stem of the common cattle-Vetch, sent from Sir Hugh Beevor's garden at Hargham.

The "Thorn Apple."—Mr. Worsdell showed further examples of the so-called Thorn Apple from Dorsetshire, demonstrating the change of both stamens and petals into fleshy structures in the formation of the fruits, which externally show only the edges of these structures. The tree constantly produces these curious malformed fruits.

Fasciated Vegetable Marrow.—Mr. Odell showed an example of fasciation in Vegetable Marrow in which three flowers took part. They were all staminate.

Fruit of Chimonanthus fragrans.—Mr. Fraser showed a fruit of the "Winter Sweet" planted in this country.

Various Plants.—Mr. Hay sent specimens of the following uncommon plants: Antirrhinum Coulterianum and Linanus Gravi from California; Saxifraga fimbriata from the Himalaya; a deep-coloured form of Impatiens Roylei; Meconopsis latifolia with incipient doubling.

AUGUST 13. *Present:* Mr. E. A. Bowles, M.A., V.M.H. (in the chair), Dr. Rendle, Col. Rawson, Messrs. J. W. Odell, W. C. Worsdell, E. J. Allard, J. Fraser, and F. J. Chittenden (hon. sec.).

Trigonella cærulea.—Mr. J. Fraser showed a specimen of this plant, which has a very persistent odour somewhat like that of curry. It is a native of Southern Tyrol and Italy, and is said to be used for giving scent to cheese and for spicing cattle cake.

Doubling of Tropæolum.—Col. Rawson showed some examples of Tropæolum with sepals from the calyx adjacent to the spur, where petaloid growths had been produced bearing an anther (or part of one) on their margins. He considered that this might be the beginning of the doubling of the flower. Mr. Allard pointed out that there were two forms of double Tropæolums arising from different kinds of multiplication of parts.

Plants from Palestine.—Mr. Odell showed examples of Marrubium vulgare, Verbascum Blattaria, and a species of Nigella raised from seed sent from Palestine. The last was not recognised, and Dr. Rendle took it for further examination.

Rubus sp.—Mr. Bowles showed a species of Rubus, a chance seedling in his garden, and probably of Chinese origin, with palmate leaves, white tomentose beneath, and drooping clusters of large black fruits. Dr. Rendle also took this for further examination.

Damage by Hail.—The Rev. W. Wilks showed a specimen of Vitis with the foliage perforated by hailstones in a recent storm at Shirley, and the stem with large warts resulting from damage from the same agency.

UNITED HORTICULTURAL BENEFIT AND PROVIDENT.

AUGUST 12.—The monthly meeting of this Society was held in the R.H.S. Hall, Mr. Chas. H. Curtis presiding. Three new members were elected. Two members withdrew interest amounting to £7 0s. 8d., and two members withdrew £42 0s. 5d. from their deposit accounts. The Army Forms relating to the deaths of Rfn. W. J. Gibson, Pte. G. A. P. Bentley, Pte. C. Maunder, Lance-Corporal R. J. Bird, Rfn. J. M. Green and Pte. F. C. Wootton were produced, and the sum of £20 16s. 1d. was passed for payment to their respective nominees. The sum of £21 19s. 7d. was also passed for payment to a lapsed member. The sick pay for the month on the ordinary side amounted to £66 6s. 3d., and in the State Section to £20 3s. 4d., while maternity benefits amounted to £6.

The Committee wishes to remind members that they must now notify the secretary on the day of incapacity; sick benefit is not payable retrospectively unless a satisfactory reason for delay is given. Any members wishing for a further supply of forms for junior membership can obtain same from secretary.

SCOTTISH HORTICULTURAL.

AUGUST 6. The monthly meeting was held at St. Andrew Square, Edinburgh, Miss Burton, vice-president, in the chair.

Mr. J. S. Brunton, Barnbey, gave an interesting lecture on "Horticulture in the United States" as he saw it recently on an extensive tour through the country. He dealt with it under the following heads: (a) public parks, (b) private gardens, and (c) commercial establishments. An account of the damage done by the Huns to nursery establishments in Belgium was given by M. Boackenooghe, a nurseryman at Ypres, whose premises were completely destroyed, and who is at present residing in England. Exhibits of Potatos, etc., were set up by Messrs. Dobbie and Co. and Miss Burton; of Campanula pyramidalis by Mr. T. W. Scarlett; and of Physalis edulis by Mr. J. Bruce, each of whom received a Cultural Certificate.

TRADE NOTES.

THE premises and goodwill of Messrs. W. Wells and Co., Chrysanthemum and Carnation growers, Merstham, Surrey, will be offered for sale by auction, as a going concern, on September 3, at the Market Hall, Redhill. The sale is under the instructions of the trustees of the late Mr. William Wells, and in pursuance of the direction to that effect in his will. The premises include 6½ acres of land, a freehold cottage, and 17 glasshouses.

UNDERSIZED APPLES.

The Food Controller has issued a Temporary Order which provides that no Apples capable of passing through a 2 inch ring—with the exception of Beauty of Bath, Bismon, Ben's Red, Cox's Orange Pippin, Devonshire Quarrenden, Lady Sudeley, Miller's Seedling, Yellow Ingestre, Duchess's Favourite (Duchess of Gloucester), Duchess of Oldenburg, Feltham Beauty, Mr. Gladstone, Longacy Pippin, Worcester Pearmain, Hunt's Early, Irish Peach, James Grieve, Junouting (Red and White), and King of the Pippins (Prince's Pippins)—shall be sold or delivered or offered for sale or delivery in the United Kingdom, to any person other than a licensed jam manufacturer, or to a licensed dealer who undertakes to sell to a licensed jam manufacturer. The grower's price for such Apples is £12 per ton. Dealers are allowed to add a commission of 12s. 6d. per ton, and provision is made for packages and tolls on the lines of the Plum (Sales) Order.

This Order will be followed by another dealing with the whole question of the sale and distribution of Apples, after the Board of Agriculture has consulted with representatives of the fruit growers.

COVENT GARDEN MARKET.

We understand a private company has been formed to administer the Covent Garden Market estate, which has now passed out of the hands of the Duke of Bedford. The new company consists of Mr. C. F. Boston (chairman) and Dr. F. D. Woolley (sons-in-law of the late Sir Joseph Beecham), Sir Thomas Beecham, and Mr. Henry Beecham. The solicitors to the estate are Messrs. Russell, Cooke and Co., London, and Messrs. Bremner, Son and Corlett, Liverpool.

CROPS AND STOCK ON THE HOME FARM.

Rye.

For sheep food in April, before the Vetches or Trifolium are ready for use, Rye fills a gap, and if not required by reason of good late Turnip and Swede crops, Rye is useful for seed and for milling. The straw from Rye is valuable for thatching, especially for buildings, lying closer than Wheat straw, and therefore making a more lasting roof, besides being neater in appearance.

September is the best month in which to sow Rye; sow at the rate of 3 bushels per acre on a well prepared surface, following Wheat; on a clean stubble plough once to bury the stubble and weeds thoroughly, then harrow and roll to obtain the necessary tilth.

Winter Barley.

Winter Barley is a most valuable sheep food in a green state, and if not required for sheep it can be allowed to ripen and be used for seed, or for pig food if released. Winter Barley ripens early, and permits an early start in harvesting, which is an advantage where a large acreage is under cultivation.

Potatos.

Early varieties have produced heavy crops of clean, good tubers that sell at a reasonably good price. The favourite variety in this county is Epicure. Although a second early, it grows so quickly and yields so heavily that it is employed mainly as a first early. Its cooking qualities are much improved by early use, and its proper season is August. Sharpe's Express and Eclipse are also favoured by many growers. British Queen is popular as a second early, cropping well, and when dug early it is not liable to disease. Home saved sets of early or second early Potatos should not be left in the ground too long; lift and allow them to lie on the ground until thoroughly dry and partially green, and then place them thinly in boxes and store in a cool shed. Care in selecting the tubers is important; retain shapely, sound examples, weighing about 2 oz. each.

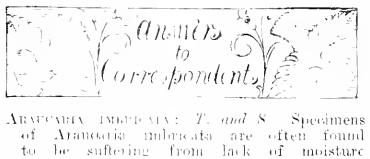
There are signs of Potato disease in many gardens, especially where the crop was not sprayed, and the sets were planted closely together. Overcrowding certainly helps the spread of the disease. Late varieties, like Iron Duke, Arran Chief, King Edward, and Up-to-Date, which have been sprayed twice, look wonderfully well. A third spraying, it contemplated, should be given at once. Even with a big plot of 20 acres it is not so difficult a matter to spray with a horse machine as some would have us believe; this work can be done easily in two days by a quick horse.

Vetches.

Vetches form a valuable crop for sheep, horses and cows, when grown under favourable conditions. If not required for feeding it will pay to save the seed. In that case the crop should not be sown quite so thickly, as, when the plants are not crowded, the pods are more freely produced, and that is the main object when growing Vetches for seed. When grown for feeding it is bulk of growth that is desired. For seed purposes 1½ bushel of seed per acre is ample; for feeding purposes add another ½ bushel of seed. Any clean stubble, once ploughed and harrowed, will provide a suitable tilth. Drilling is the best method of sowing, as all the seeds are then buried, and not exposed to the depredations of pigeons and rooks. The surface need not be made too fine, as small clods act as a slight protection during the winter months, and they are easily pulverised by rolling in spring. *E. Molyneux, Swanmore Farm, Bishops Waltham, Hants.*

Obituary.

Frank N. Meyer.—News comes from America of the death of Mr. Frank N. Meyer, explorer for the Washington Board of Agriculture, whose body was found in the Yangtse-Kiang River in China without any evidence of the cause of death. Mr. Meyer had made many journeys to Siberia, Manchuria and China in the search for new fruits and vegetables, and an interesting account of his travels and discoveries will be found in a recent report of the Board of Agriculture of Washington. Among the interesting plants which Meyer introduced to America were a wild Peach, possibly the prototype of our cultivated varieties, many varieties of Persimmons, Jujubes, Citruses and Bamboos, all of which offer great possibilities for certain climatic conditions in the United States. Meyer was one of the most modest and unassuming of men, and when he could be induced to speak of his adventures one could only be surprised that so small a body held so courageous a heart. He will be sadly missed by those who knew him, but he will be remembered by gardeners for many generations as the fruits of his work mature and develop.



Araucaria imbricata: *T. and S.* Specimens of Araucaria imbricata are often found to be suffering from lack of moisture or from semi-starvation. When the lower branches show signs of turning brown the soil should be examined for the purpose of discovering whether more moisture is needed or not. If the soil is poor, remove a few inches from the surface of the area occupied by the roots and supply a compost of loam and old manure, followed by a mulching of manure. If this treatment is not possible provide a mulching of rich manure, and, if necessary, supply water, allowing it to pass through the mulching. Mud dredged from a pond or lake makes a suitable top-dressing for such trees, and may be used in the absence of manure.

Bedeguar Gall on Rosa lucida: *J. P.* The only point unusual about the gall sent is its appearance at the extreme tip of a short growth produced at the base of the plant. See answer to *G. E.*, p. 74.

Crops and Stock for a 50-acre Holding: *B. H. W.* Of the 25 acres of pasture, 10 acres should be cut annually for hay, changing the fields and feeding them alternately; the aftermath should also be fed off yearly. Crop 5 acres of the arable land with Oats, to provide straw for winter use, and corn for one horse; put 3 acres under Mangold for cattle, and plant the remaining 2 acres with Potatos, early or late varieties, according to the requirements of the neighbourhood. One or two cows should be kept for private use to provide milk and butter. We also advise the purchase of two-year-old Shorthorn heifers of good quality, to calve in the autumn when they are three years old, as such stock sells well at that season. The number should be regulated by the quantity of grass provided by the fields, but if of poor quality the grass could be improved by the application of basic slag in the autumn. One handy permanent man would suffice, with casual labour for haymaking and for hoeing the Mangold and Potato crops. One horse would suffice, with the hiring of a second horse occasionally, or the main work of ploughing, etc., could be carried out under contract.

Insect Pests on Peach Leaves: *D. C. H.* Dry soil around the roots and a dry atmosphere in the house have combined to encourage red spider and thrips, two minute insect pests which always seem to be lying in wait to attack Peach and vine foliage. The leaves sent give evidence of very bad attacks, consequently drastic measures must be taken to clear the foliage. Fumigating and vigorous syringing with a nicotine or similar insecticide should soon effect a clearance, but all parts of the tree and structure should be treated with the insecticide, and also with clear water. See that the border is thoroughly moistened, and take care that the Peach foliage is dry before fumigating the house in the evening; syringe with clear water early in the morning, after fumigating. Fumigate the house on two successive evenings, then use insecticide at intervals of two days.

Names of Fruits: *A. O. S.* Hales' Early.—*J. C. F.* 1, Worcester Pearmain; 2, Devonshire Quarrenden; 3, Duchess of Oldenburg.—*W. R. C.* 1, Muscat of Alexandria; 2, Lady Downe's Seedling.

Names of Plants: *E. S.* Hypericum moserum. *S. B.* Carlenia benedicta.—*J. K.* 1, Monarda didyma; 2, Inula glandulosa; 3, probably Solidago rugosa (send again); 4, Physalis capensis; 5, Spiræa japonica var. Bumalda; 6, Polygonum amplexicaule; 7, Centranthus ruber; 8, Eupatorium cannabina; 9, Viburnum Lantana; 10, Solidago virgaurea.—*I.* 1, Hemerocallis flava; 2, Sedum Telephium var.; 3, Tradescantia virginica; 4, Veronica spicata; 5, Euphorbia cyparissias; 6, probably Myosotis palustris (should have been sent when in flower).—*C. M. P.* 1, Pyrus Aria; 2, Bignonia radicans; 3, Picea excelsa var. Clanbrasiliensis.

"Rust" on Tomatos: *R. B. S.* The disease on the Tomato leaves is known as Tomato-leaf Mould, or Tomato Rust (Cladosporium fulvum). Remove and burn all badly diseased portions of the plants and spray the remainder with weak Bordeaux mixture or with a weak solution of sulphide of potassium. Wherever this disease has appeared previously the Tomato plants should be sprayed, as a preventive measure, while quite young.

Scarlet-fleshed Melon: *S. A.* The scarlet-fleshed Melon is most probably a local seedling. It is somewhat like the variety named King George, but hardly so handsome, though the depth of flesh and the flavour are both first-rate. We suggest you give the variety a provisional and local name and send a few seeds to the Superintendent, R.H.S. Gardens, Wisley, so that the variety may be tested with others.

Communications Received.—G. E.—M. E. H.—B. of A.—Dun—A. H.—A. W.—Major G. H. H—J. A. P.—W. P. N

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CONTENTS.

ILLUSTRATIONS.

THE PROGRESS OF VEGETABLE CULTURE.

APART from the great stimulus in the cultivation of vegetables due to circumstances connected with the war the importance of vegetable growing has been more fully recognised during the last two decades than in any earlier period. The kitchen garden was at one time looked upon as the Cinderella of the establishment, and even head gardeners regarded the matter of vegetable cultivation as of only secondary importance. It is not very long ago that men skilled in the work were difficult to obtain; under-gardeners especially were loth to take up this side of their profession, and seemed to regard the indoor departments as the special aim and object of all successful gardeners. I remember the time when out of every three candidates for a position in the kitchen garden only one on the average had any real knowledge of vegetable culture. Not only was this true of journeymen, but it was probably more so of foremen. All this tended to retard progress, and another matter which had a similar effect was the contempt with which exhibitors of vegetables were regarded by those who were showing fruits and flowers. This was due to a belief that vegetable exhibitors showed their products only for the sake of the prizes; and this apparently was the view also of organisers of horticultural exhibitions, at one time judge by the way in which vegetable exhibits were thrust into the background and handicapped in every way. All this is now changed, and, as a result of the gradual improvement which has taken place, owing to the efforts of a few vegetable enthusiasts, the proper status of vegetable exhibits in any horticultural exhibition is now fully recognised. In recent years growers have begun to realise that there is as much fascination and interest in producing good vegetables as there is in cultivating rare and choice flowers or luscious fruits. The advance is also partly due to exhibitions, for the habitual exhibitor must be ever on the alert to obtain superior varieties as well as high-class produce.

It is sometimes urged that a grower of exhibition vegetables is less capable of providing an establishment with produce of everyday quality than the ordinary gardener; but this is a fallacy. The man who produces the best exhibition produce excels also as a grower for home requirements.

Not only is progress observed so far as it concerns professional gardeners, but the public also takes a great interest in the matter, and the daily news papers frequently organise vegetable shows at which they offer valuable prizes to amateur growers.

In past years enormous quantities of Potatos and Onions—to mention only two staple vegetables—have been imported from abroad, and in future we may have to depend more and more on our own efforts in raising food, and there seems no reason why we should not be entirely self-supporting in these matters. But in order to attain this, something more is needed than merely to plough or dig up a piece of land and expect to reap a rich harvest. The cultivator must not only enrich his soil with a view to getting it into a good condition, but cleans it if necessary, and in such a case ultimately obtains much greater success than his less careful neighbour. In this district there are two or three fields which have received such careful treatment as I have outlined, and although they were only rough pasture lands a few years, they are now carrying some of the finest crops it has ever been my good fortune to see. Another matter in which it behoves growers to exercise careful forethought is the selection of crops for certain sites, and of varieties for planting. Often, for example, one sees a large area of ground planted with Carrots although it is totally unsuitable for such a crop. Such a procedure can only end in failure. In the selection of suitable varieties the grower should be guided by the success or failures of his neighbours, for it is well known that certain varieties as well as certain kinds of vegetables do well in one district, are unsuccessful in others.

It may be urged that the amount of land suitable for vegetable cultivation is somewhat limited, but there is no reason why even poor pasture land, which is almost unremunerative to the grazier, cannot be improved by spade cultivation and manuring, and made to produce excellent crops of vegetables. All this requires hard work, but those who possess such inferior land must be roused to action. Moreover, such details as the trimming of hedges and the eradication of weeds must be enforced in the common interests of all. Choked and rat-infested ditches must be cleared out, and made to serve their proper purpose of draining the land.

Hand in hand with the improved cultivation of the land must come the creation of improved varieties. There is no doubt that one of the greatest aids in this matter is the exhibition, which leads growers to strive after improved quality, and to seek for varieties which are either earlier or later than the normal kinds, and will thus tend to lengthen the season.

It is apparent to all that much progress has already been made, and it may be expected that, in view of the stimulation of interest in vegetable growing which has been brought about through the war, this progress will be maintained. It is earnestly to be hoped that in the somewhat easier conditions which will follow the making of peace, the lessons thus learned will not be forgotten. *Edwin Beckett, Aldenham House Gardens, Elstree, Hertfordshire.*

ORCHID NOTES AND GLEANINGS.

CATTLEYA HELEN LANGLEY

A FLOWER taken from the plant of this pretty hybrid which obtained a First-class Certificate at Manchester in December last, is sent by J. B. Hurst, Esq., The Knowle, Morley, Yorkshire. The hybrid was obtained by crossing C. Dusseldorfer Undine (intermedia alba × Mossiæ Wagneri) and C. Mrs. Myra Peeters (Gaskelliana alba × Warneri alba), all its ancestors being albinos a character which is continued in the present hybrid. The flower, which equals those of C. Warneri alba in size, is pure white, with the slightest shade of primrose-yellow in the centre of the lip which is beautifully crimped and fringed at the margin. This and the many other choice, pure white Orchids that add to a section hitherto more or less rare, amply testifies to the utility of the hybridists' efforts.

NOVELTIES FROM CHELTENHAM

MESSRS. JAS. CYPHER AND SONS, Queen's Road Nurseries, Cheltenham, have sent flowers of some of the handsome Orchids now in bloom at their nursery. Laelio-Cattleya blenheimensis is represented by fine forms measuring nearly 9 inches across, and showing a great variation in point of colour in the different varieties. The cross is between Cattleya Warscewiczii and a fine form of Laelia tenebrosa, the latter obliterating the yellow lines and disc of the lip of C. Warscewiczii and resulting in a self-coloured bloom with darker veining. The sepals and petals of one extreme variety are light mauve, and in the other the sepals are pale buff-yellow and the petals cream-white with a pale buff shade.

The species entering into the composition of the richly-coloured Laelio-Cattleya Hesta (C. Peetersii × L. C. Rubens) are Cattleya Dowiana aurea, C. Warscewiczii, C. crispulosa, and Laelia purpurata. The flower is of good form and fine substance, the sepals and petals having a rolled gold gloss, fringed and veined with purplish rose. The lip is dark velvet colour with orange lines at the base.

Cattleya Albion (Suzanne Hye de Crom × O'Brieniana alba) is a beautiful pure white flower, having a chrome-yellow disc to the lip.

Cattleya Snowdrop is a new cross resulting from C. O'Brieniana alba and C. intermedia Aquinii (Mossiæ Wagneri × Warneri alba). It is one of the finest of the white C. O'Brieniana crosses, of excellent shape and fine substance. The sepals and petals are tinged lilac and the flower is wholly pure white with a small yellow disc in the centre of the lip, which is unusually broad for this section.

Cattleya Wavriniana (Warscewiczii × granulosa Schofieldiana) was originally raised by Messrs. Peeters, of Brussels, and named in honour of the late Marquis de Wavrin. The

variety of this interesting link with Continental gardens, which gained a First-class Certificate at the Royal Horticultural Society, was described in the *Gardeners' Chronicle*, July 26, 1902, p. 65, and the flower now received is equal to the best form, measuring 7 inches across, in colour light rosy mauve, the labellum being finely veined with violet-purple.

Messrs. Cypher also send a flower of a large globular white Anguloa, purchased as Anguloa species, which is near to the *A. eburnea* of *Williams' Orchid Album*, III., t. 133, and is referred to in Veitch's *Manual of Orchidaceous Plants* as *A. Clowesii eburnea*. It seems to differ from *A. uniflora* by its larger size and more highly developed labellum.

COELIA MACROSTACHYA

This graceful Orchid (see fig. 52) was discovered by Hartweg in 1841 at the Hacienda de la Llaguna, Mexico, and plants were sent by him to the Royal Horticultural Society's Garden at Chiswick, one of the specimens flowering in the collection there in 1849. Probably in consequence of ill-developed material, Lindley did not appear to be much impressed by the beauty of this Orchid (*Gen. Plant.*, Sup., IV., pp. 114, 155, with figure). In 1853 a specimen sent from the Belfast Botanical Gardens was illustrated in the *Botanical Magazine* (t. 4712), the late Sir Joseph Hooker remarking: "It is a pretty and handsome plant, and well worthy of a place in every Orchidaceous collection, flowering in August."

Since that time the presence of fine specimens of *Coelia macrostachya* in many gardens, and in collections of Orchids staged at floral exhibitions, amply warrants the estimate of the eminent botanist, and at present, when the cultivation of not a few of the showiest species has declined, the species still commands attention.

The plant is compact and dwarf in habit, its oblong pseudo-bulbs being furnished with arching, parallel-ribbed leaves a foot or more in length. The stout scapes, which are as long as the leaves, have the basal part clothed with large, ovate, acuminate, brownish sheaths, the upper part consisting of a dense spike bearing numerous flowers with somewhat incurved segments, rose-coloured on a silver-white ground, the petals being paler than the sepals, and each flower furnished with a linear, acuminate bract.

Coelia macrostachya thrives well in the intermediate house. It should be treated similarly to *Zygopetalum Mackayi*. A goodly proportion of the potting material should consist of fibrous yellow loam. The atmosphere and temperature suited to the Mexican Laelias, with the reasonable amount of sunlight admitted to those plants, suit the Coelias.

Two other species are sometimes seen in gardens, *Coelia Bauerana* (*triptera*), smaller but of similar habit to *C. macrostachya*; and *Coelia bella*, which has short, few-flowered spikes of white flowers 2 inches long, the sepals tipped with purplish rose. The latter is a fragrant and pretty species.

Fig. 50.—Coelia macrostachya: flowers white.

Photograph by C. P. Raffill.

TREES AND SHRUBS.

FOTHERGILLA GARDENII

(Syn. *F. alnifolia*).

Although introduced many years ago, this deciduous shrub (see fig. 50) has never become common in gardens. It is perfectly hardy so far as its capability of withstanding our severe winters is concerned, but it is evidently in some way lacking in robustness, otherwise it would not be so scarce. Being only 2 or 3 feet high, and not a very vigorous grower, it is unfitted for the ordinary rough shrubbery; but if it lacks the self-assertion necessary for such a position, there are few more charming plants for a border of select and carefully tended shrubs. Its blossoms in spring, the inflorescence having a bottle-brush appearance owing to the length of the white stamens, which, petals being absent, form the only conspicuous part of the flowers. The greatest beauty of this Fothergilla is, however, apparent in autumn, when its leaves turn a rich, glowing red. It is a native of Eastern North America, and the generic name was given in honour of Dr. John Fothergill, famous in the later years of the eighteenth century for his botanical collections at Upton, in Essex. Another species—*F. major*—has lately come into prominence. It is a larger and more robust shrub than *F. Gardenii*, and grows 8 feet high. It is better as a flowering plant, but it lacks the rich autumnal glow of *F. Gardenii*, its foliage turning yellow. *F. Gardenii* enjoys a light loam, and grows all the better if peat and leaf-soil are mixed with the loam at planting-time. *W. J. B.*

EUCRYPHIA PINNATIFOLIA

Among the shrubs or small trees that flower during the month of August, Eucryphia pinnatifolia occupies a prominent position. It is of somewhat erect growth, the pinnate leaves, which consist of 3 to 5 leaflets, being of a dark, shining green. The flowers, which are freely produced, are about 2½ inches across, and composed of four petals of the purest white. The centre of the flower is quite filled with the long, prominent stamens, tipped with golden anthers. From this circumstance the bloom bears a certain resemblance, except in colour, to that of a Hypericum. There is a double-flowered form (see fig. 51), which originated as a seedling in the gardens at Castlewellan, Co. Down. Eucryphia pinnatifolia was first introduced by Richard Pearce, of tuberous Begonia fame, while travelling in Chili on behalf of Messrs. James Veitch and Sons in 1859. The plant is quite hardy in this country, but when young is somewhat apt to die off suddenly. Once established, however, it appears to do well, in proof of which I may mention that during my last visit to the Coombe Wood Nursery one of the most striking features was the original plant of this Eucryphia some 15 feet or so in height, bearing hundreds of flowers. Mr. Bean recommends that when young it should be planted

in moist, peaty soil associated with Heaths, so that its roots are shaded. This species is, as a rule, sub-evergreen in character, but there is another one—E. cordifolia—which is strictly evergreen. This has leaves simply heart-shaped, and is more tender than the preceding, though it does well in the warmer districts. E. cordifolia is a native of Valdivia and the Island of Chiloe, where it is said to attain a height of 30 feet or more. Cut sprays of both these species, laden with blossoms, were shown at a recent meeting of the Royal Horticultural Society. *W. T.*

OLD MULBERRY TREE AT BISHOP'S HALL.

AFTER reading Mr. A. D. Webster's article on the Mulberry tree in Muswell Park, London, in the *Gardeners' Chronicle* of August 3 (see p. 41), Lord Lambourne asked me to measure the old Mulberry tree in his garden at Bishop's Hall, Romford, Essex. I did so, and find the diameter of branch spread is 50 feet, and the girth of the trunk 9 feet 6 inches at 3 feet from the ground. *H. Lawrence, The Cottage, Hodge.*

THE ROSARY.

ROSES OF RECENT INTRODUCTION.

At the present period the Roses that are most widely cultivated, on account of their reliable hardiness, and distinctive colouring, are the Wichuraiana and Austrian hybrids, and the Hybrid Teas. Out of all proportion to the diminution of the Noisette and Tea Roses has been the steady increase of highly effective Hybrid Teas, many of these, such as Gorgeous and Mrs. Hugh Dickson, with Summer Austrian Briar climbers, on their own roots, and especially those of the charming "decorative" type. For these beautiful novelties we are indebted to several of the most distinguished of European rosarians, including M. G. Prince, M. Perrot-Dudier, of Lyons (raiser of Madame Edouard Herriot, Rayon d'Or, Constance, Totote Gely, Mlle. Cécile Martel, Raymond, Admiral Ward, and the exquisite tinted Lyon Rose), and to Messrs. Wilson Pearl and Sons, of Waltham Cross, who in recent years have given us Juliet, Prima Donna (the latter the darkest of all Roses of this character), and Aviator. Nor can we forget the great achievements, especially within the last decade, of Messrs. Alex. Dickson and Sons, of Newtownards, from whose nurseries we have received Margaret Dickson Hamill (a distinct acquisition, of radiant colour), Irish Fireflame, and Mrs. Wemyss Quin; of Mr. Hugh Dickson, the redoubtable rosarian of Belfast; or of Mr. Samuel McGredy, of Portadown, in Armagh, the eminent raiser of Mrs. Hugh Dickson, Golden Spray, Flame of Fire, and Golden Emblem Roses, which, by reason of their distinctive character and artistic capabilities, have already achieved a great reputation. Other British rosarians who have contributed to the attractiveness of decorative Roses are Messrs. Benjamin R. Cant and Sons, of Colchester; Mr. George Paul, of Cheshunt, whose Lemon Pillar is a near approximation to the formation of a perfect Rose; Mr. Walter Easlea; and Mr. E. G. Hicks, of Hurst, in Berkshire, whose Princess Mary has (like the even more lustrous Red Letter Day) a beautiful, dark velvet texture, like the flash of a bird's wing in the radiance of the sun.

It is gratifying to remember that many of those modern representatives of the "queen of flowers" are, comparatively, of easy culture, only requiring a sunny, half-sheltered situation (such as I have here at Kirk House, in Wigtownshire), and a rich, fibrous soil. These new Roses have also for the most part the essential attribute of fragrance. What is now chiefly to be desired is a Hybrid Tea, as fascinating in aspect as the dark-hued George Dickson, without its pendulous tendency, or a Golden Emblem, as strong in its growth, and as floriferous in its nature as Bouquet d'Or. Perhaps the nearest approximations to such almost ideally vigorous development and floral capability are the French Constance and the Irish Mrs. Wemyss Quin, which may be reckoned among the finest of all recently introduced, bright yellow Roses. I hope that Christine, which has not yet "ripened," and Golden Emblem, which is not yet established, may prove, eventually, equally vigorous and effective acquisitions. *David R. Williamson.*

FIG. 53.—ECHEVERIA PULVINATA WITH DOUBLE FLOWERS. (See p. 88.)

ON INCREASED FOOD PRODUCTION.

HARVESTING ONIONS.

ONIONS which were sown early in spring now have their top growths bent over, and their bulbs hard and dry. All such should be drawn from the soil at once, but they should not be taken under cover yet. I have known some growers allow Onions to lie on the ground where they were grown, but I think the bulbs do not dry quite so well or quickly under such conditions as when laid on a gravel walk. They should be spread out in a single layer. After remaining thus for two days they should be turned, and this operation must be repeated until the bulbs are firm and dry. The bulbs which are the smallest in the neck at lifting time will dry first, and if really good winter-keeping Onions are needed it is well to select the smallest necked bulbs and dry and store them by themselves. Bulbs with very thick, green, sappy necks should have a goodly part of the top cut off right away, and the remainder twisted to press out the sap.

A few weeks before the Onions are to be lifted it is a good plan to examine the beds and bend down all the thick stems. This retards growth and assists ripening.

A dry day should be chosen for removing the Onions from the ground, and it is better to have them far into September than to harvest them while wet. When suitable weather fails the best way of dealing with them is to take them into some open shed or loft and dry them there. They are improved by being exposed to the sun, if only for a few

days, and the ripening may be finished in sheds afterwards. In any case, they ought to be well dried before being placed in their winter quarters, and the larger the bulbs the more drying they require. I presume others besides myself have noticed that the flavour of Onions in winter is influenced greatly by the way they are harvested. If not properly dried, and afterwards stored in heaps, they lose much of their flavour.

As a rule, I allow my Onion bulbs to remain in the open from ten to fourteen days after lifting, and if the weather is dry at the end of that time they are placed indoors at once.

The place in which to store Onions generally depends on the accommodation provided. Any shed, whether well lighted or nearly dark, is suitable for storing Onions, provided that it is dry and cool. Frost or a high temperature will soon cause decay, and heat does more harm than cold. In winter the Onions here are given much the same treatment as Apples and Pears, and they keep well until Onions are plentiful again in the open quarters. *James A. Paice, Aldenham Vicarage Gardens, Watford.*

EARLY POTATOS.

I was glad to see in Mr. Cuthbertson's remarks on p. 75, that he included as excellent at least two of the varieties I recommended on p. 23. Snowdrop I have found to be second to none for flavour and cooking qualities on our light soil; it is also a satisfactory cropper and a handsome Potato. The crop was about 8 tons per acre, and there is no trace of disease. Epicure has proved an exceptional variety this season in point of earliness, and I estimate the crop at about 12 tons to the acre. I would only commend this sort as an early variety because the tubers have deepset eyes, and would be wasteful if peeled.

King George is reported as the coming second early variety for infected soil, or any soil, and I have found it a first-rate cooker. It is a white, oval tuber, of good size, and a prodigious cropper; in fact, the best cropper we have yet lifted. It is, moreover, a free, vigorous grower, and as yet (third season) we have found no trace of disease.

The old Early Rose turned out excellently, and gave a very heavy crop; this Potato would prove a paying variety to grow, especially on allotments.

The best manure for Potatos is a heavy dressing of farmyard dung. I do not think artificials did a great deal of good this season to early varieties, as those we dressed were no better than those that only had the farmyard manure applied. No doubt the dry weather of spring was responsible for this, and it was also the principal cause of a short crop among many early varieties.

Maincrop and late varieties look well if we except King Edward, which up to this season was the strongest grower and cropper in this neighbourhood. Arran Chief is the strongest grower hereabouts, with Up-to-Date next. *W. A. Cook, Abbots Wood, Godalming.*

PLANT NOTES.

TRICHINIUM MANGLESII AND HEERIA ELEGANS.

I made the experiment of leaving both these plants, which come from the Swan River and Mexico respectively, out last winter. They were covered with dry leaves, and survived 26° of frost. The Trichinium had not made any leaves by the end of July, but on lifting the fleshy roots and placing them in moist sand in a Cucumber house, growth soon started. Both plants flower well out-of-doors, but rather late in the season. *William Lawrence, Burford, Dorking.*

The Week's Work.

THE KITCHEN GARDEN.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

Mushrooms.—Where Mushrooms are to be grown, horse manure, freed from long straw, should be collected and placed in an open shed where it can be protected from heavy rains. Turn the heap daily to allow excessive steam to escape. Should the manure become dry, a slight sprinkling of water will be necessary to induce fermentation.

Asparagus Beds. Keep the surface of Asparagus beds free from weeds. After rain, give the beds a good soaking of diluted liquid manure, as this will assist in building up the crowns upon which next year's crop depends.

Cauliflowers.—Fewer plants have "bolted" this season than usual, and favourable weather has caused both the autumn and early spring raised batches to develop quickly. The plants sheltered by frames were naturally the first to come into use. Seed should now be sown on a warm border. Place the resulting seedlings under hand lights in cold frames for the winter; 4 inches apart each way will be sufficient space for them. All gardeners are anxious to have Cauliflowers ready in spring, as soon as the Broccoli is over. Another sowing should be made ten days hence, as this sowing will prove most useful. Eclipse and Walcheren are two old varieties that can be relied upon, with Veitch's Autumn Giant to follow them. Sturdy plants are obtained by sowing thinly and broadcast on moist or newly moistened fine soil. Where birds are troublesome the beds must be netted. Frequent dustings of soot and lime applied when the seedlings are damp will generally act as a deterrent to birds and keep slugs away.

Cucumbers. Make another sowing of seeds to provide plants for fruiting in the winter and early spring months. As these will have to keep up the supply for a long period, they must not be cobbled. Plants will grow very fast during September, but to ensure strong and healthy growth cleanliness and liberal ventilation are necessary. The best compost consists of rough turf, lime rubble, and burnt refuse, with a little soot and bone meal, and as the stems of Cucumbers may be earthed up to almost any extent, the compost need not be more than 9 inches deep to start with. Old plants may be improved by severe pruning, followed by a top-dressing of fresh turf and bone meal, by applications of warm, diluted liquid manure and by copious syringings.

THE ORCHID HOUSES.

By J. COLLIER, Gardener to Sir JEREMIAH COLMAN, Bart., Gatton Park, Reigate.

Sophronitis grandiflora. — This brightly-flowered Orchid is now developing new growths, and any plants that require repotting should be given attention. Ordinary shallow Orchid pans form the most suitable receptacles. These should be filled to three-parts their depth with small, clean crocks for drainage. A mixture of equal parts of Osmunda-fibre or A1 fibre and Sphagnum-moss cut up rather short, with a few crushed crocks added, is a suitable rooting medium. Pot the plants moderately firmly, give a surfacing of clean Sphagnum-moss, and suspend in an airy position in the cool Odontoglossum house. During the growing and rooting season, sufficient water should be afforded to keep the surface moss in a healthy condition, and when the plants are dormant they should not be allowed to become sufficiently dry at the roots to cause the pseudo-bulbs to shrive.

Sophro-Cattleya and Sophro-Laelia.—These Orchids are beginning to make new roots, and any necessary repotting should be attended to; the rooting material should contain less Sphagnum-moss than is recommended for the species. The small kinds are best grown in shallow pans and suspended from the roof, while those of larger growth may be cultivated in well-drained pots on the stage, keeping them well exposed to the light. These Orchids do well in an airy position in the intermediate house.

Catesetum, Mormodes, and Cycnoches.—Plants of these genera which have bloomed or completed their growth should be removed from the warmest house to a cooler one that is freely ventilated during the hottest part of the day. The roots should be supplied with water whilst the foliage remains green, but after the leaves have fallen, and the growth is fully matured, very little water will be needed, and the plants should be given a long season of rest in a dry, sunny position in an intermediate temperature.

Cypripedium. Cypripedium insigne and many of its varieties and hybrids are now in full growth. These plants should be freely supplied with water at the roots, and on bright days should be syringed overhead. As much fresh air as possible should be admitted to them during the day, whilst on warm nights both the top and bottom ventilators may be opened.

Pleione. The various Pleiones are completing their growth, and should be increasingly exposed to the light. They should be allowed more liberal ventilation than heretofore. They will need just sufficient water at the roots to keep the compost moist until the foliage falls and until the flower buds appear, when the supply should be increased until the blooms are fully developed. After the flowers have faded the plants should be given only enough water to keep the pseudo-bulbs from shrivelling, until they recommence to grow in the spring. Cooler-growing species, such as P. Hookeriana and P. humilis, will require liberal supplies of water at the roots until the season's growth is completed.

FRUITS UNDER GLASS.

By W. J. GUISE, Gardener to Mrs. DEMPSTER, Keele Hall, Newcastle, Staffordshire

Renovating Early Vine Borders. The renovation of Vine borders should be carried out immediately after the Grapes are cut. Exhaustion of the borders, and consequent unsatisfactory results in cropping and imperfectly coloured fruit, can generally be traced to a sour and waterlogged condition of the soil. Prepare in advance, under an open shed, a compost of fibrous turf, mixed with mortar or lime rubble, charcoal, or wood ashes, crushed bones, and a light sprinkling of Vine manure. Let the compost be turned several times so as thoroughly to mix the ingredients, and make it into a heap in a moderately moist condition a few days before use. Fork out the soil of the old borders, commencing at the front, and gradually work to within 4 feet o fthe Vines, removing the old soil down to the drainage. Every portion of root should be carefully preserved and syringed occasionally while the work is in progress, then covered with damp mats, for on no account must the roots become dry from exposure. If necessary, let the drainage be overhauled and covered with fresh turves placed grass side downwards. The roughest of the compost should then follow in layers. Make it quite firm, continuing the operation until the border is high enough to receive the first layer of roots. These may be trimmed or shortened where necessary, placed in layers, and covered with the finest part of the compost. It is advisable to bring the roots as near to the surface as possible. When all is completed give the border sufficient tepid water to settle the soil, then cover the surface with light stable litter to conserve the moisture. During bright weather, shade the Vines for a week or so, and syringe frequently, so as to maintain a moist atmosphere until the roots are established. Never place pot plants on newly-prepared vine borders.

General Remarks.—The renovation of fruit borders, the planting of young trees, and the general examination of fruit trees in pots during

the next few weeks makes it necessary to have a general stock-taking in the compost yard. Good, rich, maiden loam should be the first consideration, and if the stock is low, the cutting and carting should be hastened, as it is not advisable to use the turf for some little time after it has been cut and stacked. The work of cutting the turf is most easily performed after a shower of rain, but if soil is required immediately, and the weather be dry, then the ground should first be moistened. Other very necessary ingredients consist of mortar or lime rubble, soot, wood ashes, and charcoal. These materials should always be kept under an open shed in tubs or boxes, or in suitably erected compartments, if large quantities are required. Manure must be kept dry, and should therefore be under cover. Give cow manure a slight sprinkling of soot before it is stacked, for, apart from its stimulating properties, soot will keep the manure free from worms.

PLANTS UNDER GLASS.

By E. Harriss, Gardener to Lady Wantage, Lockinge Park, Berkshire.

Azalea.—Ghent and mollis Azaleas are now forming their flower buds, and during this stage their roots must be supplied with diluted liquid farmyard manure and soot water, given alternately. Thorough syringings with clear water late in the afternoon will also be beneficial.

Hippeastrum (Amaryllis).—The earliest batches of Hippeastrum bulbs should have finished their growth. Place them on a shelf near the roof glass in a position exposed to the sun. Water must now be given sparingly, eventually allowing the roots to become quite dry. Admit plenty of air to the house, and keep the atmosphere quite cool. Later plants which have not completed their growth should be given plenty of water until the foliage begins to turn yellow, then the supply must be reduced.

Perpetual-Flowering Carnations.—Carnations which have been outdoors for the summer should now be placed in a light, airy house. The plants are fairly well rooted, but it is not wise to give them stimulants until the plants commence to flower, although an occasional watering with weak soot water will be beneficial. Tie the shoots regularly and use green Bamboo tips as supports. If green fly is present dip the foliage and stems in an insecticide, afterwards fumigating the house at regular intervals as a preventive measure. The plants should be syringed with a weak copper sulphate solution at fortnightly intervals as a preventive against attacks of rust. The house should be ventilated freely at all times.

The Plant Stove.—Expose Codiaeums (Crotons) fully to the sun in order to obtain good colour in the leaves. Keep the atmosphere moist during spells of hot weather by frequently damping the paths and other bare surfaces during the early part of the day, but let the atmosphere become dry by the evening, as it is only in this way that fire-heat can be dispensed with. During the next few weeks all tropical plants should be somewhat hardened off in readiness for the winter. It is obvious that the temperature of all plant houses will have to be kept much below normal in view of the fuel restrictions.

THE FLOWER GARDEN.

By R. P. Brotherston, Gardener to the Earl of Haddington, Tyninghame, East Lothian.

Dahlia.—The beauty of Dahlias is considerably lessened if means are not taken to thin out the shoots, which, in many varieties, grow vigorously at this season and somewhat hide the buds and flowers. It may be necessary, too, to relieve the plants of some main growths, as this is far better than tying all closely together. Remove seed vessels and old faded flowers from single Dahlias; this will increase the beauty of the plants as well as their floriferousness.

Hollyhocks.—Where the spikes are growing too tall for good effect the tips should be removed. Quantities of seeds will now be ready for gathering, and it must be noted that unless gathered as they approach maturity mice may do the harvesting. If the seeds are sown in boxes as soon as gathered, and the seedlings kept growing, nice strong flowering plants will result by spring time. Care, however, should be taken that seeds are not harvested from badly diseased specimens, or the seedlings will contract disease at an early stage and be worthless.

Gladiolus.—Early-flowering Gladioli will soon have seeds ready for gathering. A year is gained if the seeds are sown in boxes and the seedlings kept growing throughout winter and [illegible] through the warmer months; so treated [illegible] be strong enough to flower in their second year.

Foxgloves.—The beauty of a good strain of Foxgloves is undeniable. The plants are invaluable [illegible] where the grounds are not extensive [illegible] where there is ample space they [illegible] natural soil. Now is the time [illegible] selected [illegible]. The seeds [illegible] sown in prepared beds for future [illegible] where they are [illegible] to flower, but sometimes the seed in the latter case may lie for years before [illegible] stature and number of the [illegible] formal a manner.

THE HARDY FRUIT GARDEN.

By [illegible], Gunnersbury House, [illegible] W.

Wasps and Ripening Fruit.—More injury is [illegible] September than in any previous month [illegible] necessary [illegible] the nests [illegible]. A most effectual remedy is cyanide of potassium and the [illegible] that it may be [illegible] during the [illegible] wasps [illegible]. [illegible] effectual [illegible] dangerous [illegible]. A [illegible] wasps [illegible] their [illegible] small [illegible] reports. An [illegible] square [illegible] of [illegible]. All other interstices should [illegible]. Hundreds of wasps may be trapped in this way, [illegible] remedy when the pests are [illegible]. The bottle must stand firmly [illegible] hooks with something tempting placed inside.

Birds and Fruits.—Where birds are troublesome the best method is to cover the trees with light netting. It pays to net wall trees and all dwarf trees in the open of Apples, Pears and Plums, more especially in a season like the present when every fruit is valuable.

Peaches and Nectarines in September.—Varieties that ripen in September are [illegible] extremely [illegible] for dessert purposes, especially those that ripen towards the end of the month. A little extra attention paid to these fruits will yield a correspondingly better return in finish. It is a good plan to use clean labels for bringing the fruits well forward and quite free of the wall, so that leaves do not shade the fruits. Keep all lateral growths pinched back, then train in the leading shoots, and if the wood is found to be somewhat too thick remove the least promising growths and those that are not in the best positions. In the case of early varieties nearly all the pruning can be done in the autumn, so that maturity of the wood results.

Repairs to Walls.—If fruit tree walls need repairing the work should be done before frosts can do any harm to the new pointing. I advise wiring the walls, but not the use of galvanised wire. The latter is unsuitable. Wherever a shoot comes into contact with galvanised iron wire, more especially in the case of Peaches and Nectarines, harm may be done to the growth, and it may be killed outright by the intense cold of the galvanised wire in the winter. Annealed wire, twice or thrice painted, is infinitely preferable.

THE APIARY.

By Chloris.

Robbing.—This should be carefully guarded against, as it is much easier to prevent than to cure. On no account should any sweetstuff be left near the hives, and the place where extracting is done should be kept carefully closed, and all implements well cleansed and not left about where the bees can reach them. Even the water which has been used for washing the implements should not be thrown on the ground. All entrances to hives should be closed to 1 inch. Where bees are driven or united the work should be carried out in the evening, and no combs should be left in empty hives.

Wasps.—These have been very plentiful, and have proved a great nuisance. The nests should be destroyed as far as possible by using cyanide of potassium. A piece about the size of a Hazel-nut kernel placed on a wet piece of moss at the entrance will soon kill all that attempt to pass it. If the dead wasps are removed twice during the day the nest may then be dug out, i.e., in about twenty four hours' time. To prevent trouble next season all queen wasps should be killed. Examine the roofs of the hives to see that wasps are not hibernating there.

Cleansing Hives.—Scrape all debris from the floor boards, and carefully examine the roofs to ascertain if they are water tight; if not, make them so. Give the wood a good scraping, then a thin coat of paint, and when dry fill all cracks with putty, afterwards applying another coat of paint. After this, while the paint is still wet, lightly stretch a piece of calico over the roof, tack it along the outer edge, and afterwards paint several times. Clear the ground of all weeds and rubbish to permit of work in the apiary without the discomfort of wet boots through rains and dew.

Feeding.—I fear that it is useless to advocate feeding this autumn, where bees have less than the average quantity of stored food necessary to carry them through the winter successfully. The amount considered essential is from 20 lbs. to 30 lbs. I think the former quantity is too low, and 25 lbs. might be considered a safe quantity. Should it be found possible to feed them, to every half pint of water add one pound of loaf or granulated cane sugar, and place in an enamelled saucepan over a slow fire; stir to prevent burning (which renders it useless for bee food); just bring it to the boil, skim, and when cool it is ready for use. A rapid feeder is best, but whatever is used wrap the hives warmly to prevent escape of heat. Always place on the feeder in the evening to prevent robbing. Where bees cannot be fed, and the essential amount of food cannot be taken from other hives because they can spare none, then the only safe course to adopt is to unite the weaker colonies, or such stocks will die of starvation before the end of the season of inaction is over.

Sundry Hints.—All metal dividers, excluders and feeders which are not needed should be scraped free of propolis and wax, or cleansed by means of petrol (a strong solution of Fels-naptha soap makes an excellent substitute). Afterwards wash in a strong solution of Toxol, Izal, or other strong disinfectant, rinse well and dry before the kitchen fire, and all may then be stored in a dry place. The extractor should be cleansed when all extracting is done by using boiling water and working the machine to thoroughly drive the water into every part; then, still rotating the machine, let the water escape through the valve, dry thoroughly, and then smear lightly with vaseline to prevent any of the tin parts from rusting. All scraps of wax from top bars, etc., should be melted. Remember that the coldest winter cannot injure a strong colony if the bees have an abundance of food and are kept dry, but cold and damp are fatal.

EDITORIAL NOTICE.

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

Special Notice to Correspondents.—*The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.*

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 59.6°

ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, *Thursday*, August 29, 10 a.m., Bar. 30.2, temp. 65° Weather: Sunny.

Isle of Wight Bee Disease.

The cause of this serious disease appears, in spite of many investigations, to be unknown. Originally ascribed to a bacterium, Bacillus pestiformis apis, the disease was subsequently attributed to the action of a parasitic protozoon, Nosena apis. Recent studies conducted at Aberdeen University and also in the West of Scotland Agricultural College do not confirm the latter hypothesis, and leave the cause uncertain. The experiments carried out in Scotland lead to the conclusion that this highly infectious disease has been introduced into various parts of Scotland through the agency of bees imported from infected districts of England. Once introduced, a diseased colony becomes, inevitably, a disseminator of the disease. The spread of Isle of Wight disease may take place in many ways. Robber bees plundering hives of which the inmates are diseased and defenceless may carry away honey and infection as well, or the diseased bees may join the robbers and infect their hives. Further, since even instinct errs, bees may enter strange nests and contract or impart disease, or by sending bees to heather the healthy and the sick may mingle and the latter affect the former.

The West of Scotland experiments* indicate the highly infectious nature of the disease. Thus, by uniting colonies in the last stage of Isle of Wight disease with healthy colonies the malady broke out among the latter in the course of 4-6 weeks. Needless to say, hives in which bees have died from this distemper should be thoroughly disinfected by scraping and washing inside and out with a strong solution of formalin (1 in 60), or, if numbers of hives are to be treated fumigation may be practised by means of lighted formalin candles placed on the floor of the hives.

None of the specifics usually recommended has given Mr. Tinsley successful results, but a new treatment, consisting in the supply to the bees of a pure culture of another bacillus, B. bulgaricus, appears to be promising. This bacillus was prescribed by Metchnikoff as a remedy for intestinal troubles, and hence it seems worth while trying whether it would have any effect on bees affected with Isle of Wight disease, which is known to disturb their digestive apparatus. A culture of Bacillus bulgaricus mixed with syrup, and fed to the diseased bees by means of spraying led to a diminution of the disease, but so far the evidence is not conclusive that a cure may be effected by this means.

The author already referred to believes that the best hope of relief from the disease lies in breeding immune strains. In support of this hope it may be mentioned that strains of bees highly resistant to the disease are known to exist. Experiments are being made with Dutch, Italian, American, and Punic bees. Of native bees those of smaller size appear to be the more resistant. The author believes that as a result of these experiments it may be possible shortly to re-stock districts which have been swept free of bees by the ravages of disease.

* *Preliminary Report on Isle of Wight Bee Disease*, by Joseph Tinsley, Bull. 85, The West of Scotland Agricultural College.

A Seed-Testing Station for Scotland. — It has been officially announced that the Scottish Board of Agriculture has decided to set up a station for the testing and registering of agricultural seeds, and that negotiations are in progress for the leasing of a farm of 200 or 250 acres within easy reach of Edinburgh for the purpose. The present seed testing station of the Board in Edinburgh is to be incorporated in the new scheme, and a manager, with scientific training and practical knowledge of farming, is to be appointed. The superintendent of the station will be an expert with experience of plant breeding and the raising of new varieties, and it is stated that the superintendent of the present seed testing station in Edinburgh is likely to be appointed to this post. The station will be under the control of the Board, and they will be assisted by a representative committee of fifteen, drawn from the Highland and Agricultural Society, the Scottish Chamber of Agriculture, the Scottish National Farmers' Union, the Scottish Seed Trade Association, the Agricultural College, and the National Association of Corn and Agricultural Merchants. The work will comprise the testing of agricultural seeds, with a view to ascertaining the cropping powers of different varieties, of discovering whether new varieties really differ from existing varieties, the determination of synonyms, etc., and of their disease-resisting powers. This station is not to be confused, however, with the proposed research station in connection with plant breeding which it has been suggested should be set up in Scotland.

Eucalyptus.—The thirty-fourth part of Mr. J. H. MAIDEN'S *Critical Revision of the Genus Eucalyptus* treats of the following western species of Eucalyptus, namely: E. redunca, E. accedens, E. cornuta, and E. Websteriana. Each of these offers points of interest. Thus the type form of E. redunca is described as a shoot 3 feet 6 feet high, and it is spread over a considerable area between King George's Sound, Cape Riche, and York. Four other varieties of this species are described, one of which (elata) is a large tree, sometimes reaching a height of 120 feet, with a diameter of 17 feet. The timber is a Jarrah substitute, and some authorities pronounce it to be more durable and even better than Jarrah. It is estimated to occupy 10,000 square miles in the south-west region, from Albany to Murchison River. This variety of E. redunca is said to be the only one of economic importance. It seems odd that the type of a species should rank lower than its varieties. E. cornuta and other species of this group are remarkable for the long, horn-like operculum of their flowers. E. Websteriana is a newly-described, shrubby species, having small, thick, ovate leaves, and otherwise very distinct in its characteristics.

Vegetable Seeds for British Prisoners of War in Germany. — In March last, Messrs. KELWAY AND SON sent a parcel of vegetable seeds for each of the Prisoners' of War Camps in Germany. These were received and forwarded by the Central Prisoners' of War Committee, and Messrs. KELWAY have now received from the Committee a letter of thanks, and also the grateful thanks of the men who have sown the seeds and cultivated the resulting crops in the camps at Altdamm, Dulmen, Friedrichsfeld, Gardelegen, Geissen, Gustrow, Langensalz, Lechfeld, Minden, Munster, and Stendal. Raising vegetable crops from seeds relieves the monotony of existence, and also adds to the amenities of camp life at home, therefore it must be immeasurably interesting and useful in prisoners' camps in an enemy country.

War Item. The latest list of casualties includes the name of Private H. HOLTON, son of Mr. R. H. HOLTON, foreman at Messrs. J. CHEAL AND SONS' nursery, Crawley, Sussex, to whom the deepest sympathy will be extended by his numerous friends in the horticultural world.

The Acacias of Tropical Queensland. — In continuation of his studies of the Acacias of tropical Australia, Mr. J. H. MAIDEN contributes a synopsis of the known Queensland species to the *Proceedings of the Royal Society of Queensland*, Vol. XXX., pp. 18-51, with seven plates. The author has had the advantage of figuring a number of old types preserved at Kew and the British Museum, thus enabling him to clear up many obscure and doubtful points. Sixty-two species are recorded, including four new ones, and they represent practically all the sections of the genus Acacia. No attempt has been made at citing aboriginal or popular names.

The Destruction of Rats. — The abridged account* of Mr. R. SHARPE'S article on "Rats: How to Exterminate Them," contains a large volume of valuable information on a subject which is of great importance at the present time. Mr. SHARPE insists that where poison is used for the destruction of rats it must be used in all parts of the infested ground on the same day otherwise success is not likely to be attained. It is as though the rats, when only part of the area is treated, got to know that something was wrong, and took the precaution of abstaining from doubtful food. Mr. SHARPE recommends SANFORD'S rat poison as being superior to arsenic or strychnine, and harmless to cats and dogs, because they do not touch it, but care must be taken in laying it so that it is out of reach of fowls, pheasants or partridges. The method practised by the author is to collect a supply of small pebbles and to plaster on them one by one, by means of a broad-bladed knife, a pellet of poison about as big as a small Hazel Nut. The pebble is rolled well down the first rat-hole, so as to be out of the reach of thrushes or other birds, and so on with each hole. Mr. SHARPE suggests that the authorities should fix especial rat-poisoning days and insist on the one day treatment of each place infested with these vermin. It is of no use to lay the poison in the same area more often than twice in a year, unless in the case of an area which has been invaded after having been totally cleared. In order to destroy the survivors, some of which are sure to remain after poison day, trapping should be practised. It should be begun three or four days after the laying of the poison. The traps should be laid in the main runs, and not elsewhere. They should be placed lengthwise but somewhat obliquely to the run.

* *Journ. of Bd. of Agric.*, XXIV., No. 12, March, 1918.

REMARKS ON THE CONDITION OF THE FRUIT CROPS.

(See Tables in *Gardeners' Chronicle* for August 3, p. 42.)

(*Continued from p.* 83.)

3. ENGLAND, E.

Hertfordshire.—The fruit crops in this district are most disappointing. Pears are the worst failure; there were no flowers on any of the Pear trees. There was an abundance of Plum and Apple blossom. Plums flowered a fortnight earlier than usual, but the snow and cold winds of April prevented the blossom from setting fruits. Apples flowered later; the trees were a picture when in bloom and the weather was not unfavourable to pollination, but the trusses of flowers were attacked by aphis. Strawberries have done exceedingly well, and so have other small fruits.—*Walter Fulford, Dellow House Gardens, Abbenhall.*

——There was a good display of bloom on Plum and Cherry trees, but the excessive amount of rain and dull, cheerless weather during the greater part of April destroyed all prospects of a crop. Apple trees in a few sheltered positions are bearing light crops, but many trees are bare, and the Apple crop is one of the lightest we have had for many years. Raspberries and Red Currants were good, but other small fruits were not above the average.—*Thomas Norton, Cheldwellbury Gardens, St. Albans.*

There was very little Pear bloom this season and there is a light crop of fruit. Apples flowered well, but the blossom seemed to be poor, and there is a very light crop. Plum trees flowered profusely and produced a heavy crop, but the fruits failed to swell. Small fruits were good, but the severe drought adversely affected them. Peaches and Nectarines set well and have swelled satisfactorily. Apricot trees set a very heavy crop and the fruits had to be thinned freely. Our soil is a very heavy overlying the London Clay.—*[illegible] Hill, North Mymms Gardens, Hatfield.*

Leicestershire.—[illegible] crop of apples [illegible] Orchards. Apples are a moderate crop, but are not matured, but Pears and Plums are almost entirely absent. Pear trees are bearing an average crop, the trees are clean and making good growth. Small fruits suffered from the continuous drought of June. Raspberries, Strawberries, and Black Currants were the most affected. The soil is of a fairly heavy nature, on a subsoil chiefly of red clay.—*H. Roberts, Prestwold Gardens, Loughborough.*

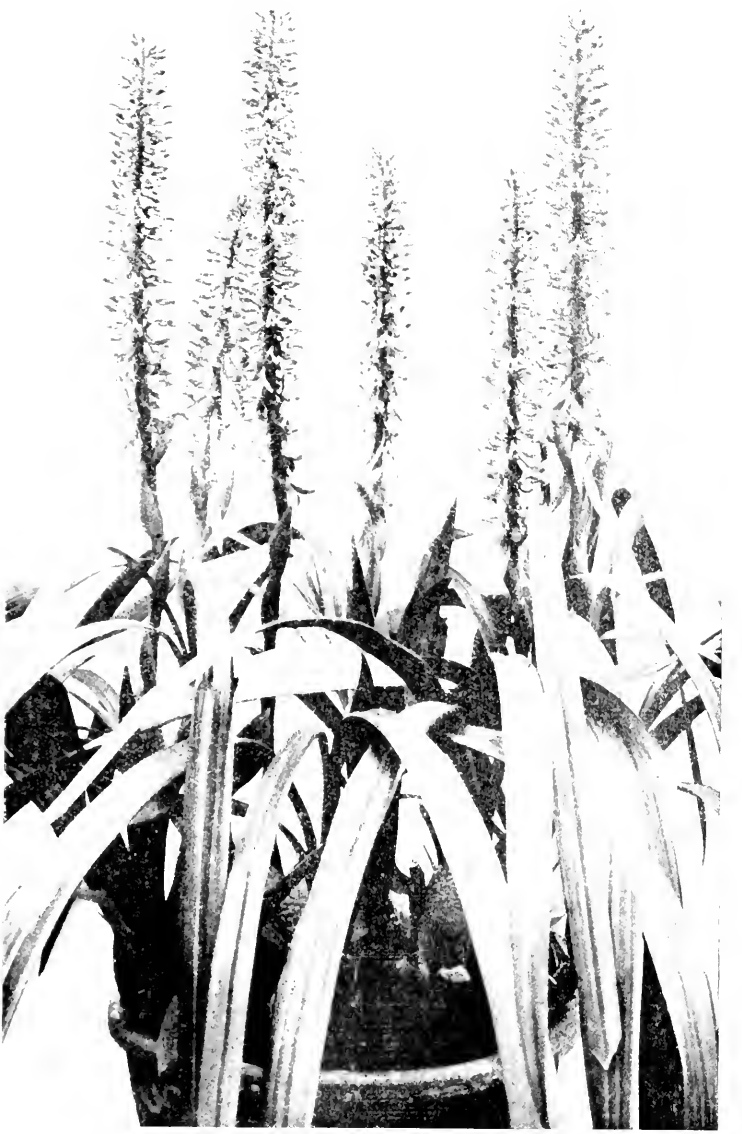
Seldom has there been such a promise of abundant supplies of fruits as this season. Apples, Pears, Peaches and Plums were a mass of bloom, and there was almost an entire absence of frost; but a long succession of cold, moist, genial nights destroyed the blossom. Apple and Pear trees are bearing very thin crops. Wall Peaches, which did well last year, are leafless, while a fair crop of Plums has set on some standards in the open wall trees lost most of their fruit directly it had set. There was a fair crop of Strawberries and bush fruits in the district, but the fruits were of small size owing to a long spell of drought. Our soil is a stiff clay.—*J. Shallcross, Burrough Hill Gardens, Melton Mowbray.*

There is an average crop on some Apple trees, but practically no Pears or Plums. Raspberries are plentiful and very good. The same remark applies to Black and Red Currants and to Gooseberries. The continued drought since May has prevented the small fruits from becoming fully matured, otherwise the crops would have been good.—*W. Paterson, Swithland Hall Gardens, Loughborough.*

Northamptonshire.—The fruit crops generally are very light and of poor quality, but Apricots and Plums on warm walls are yielding fairly well. Gooseberries bore a good crop, but drought and cold nights adversely affected other small fruits, especially Strawberries. Standard Apples and Plums are a failure. Insect pests have been very troublesome. The soil is light loam, overlying ironstone.—*John Meager, Harrowden Hall Gardens, Wellingborough.*

Currants and Strawberries were the best amongst small fruits. Black Currants were a failure.—*S. Barker, Chumbey Park Gardens, Worksop.*

——The hardy fruit crops are, with very few exceptions, under average. The trees generally flowered magnificently, but the good prospects vanished with the advent of the caterpillars,



[Photograph by C. P. Raffill

Fig. 32.—Coptis macrosepala.—flowers rose-coloured.

(See p. 92.)

Nottinghamshire.—Apples, Pears and Plums are very scarce. There was a good show of blossom generally, but it had a weak and unnatural appearance, and did not set well. Although there was a partial set on certain varieties of Apples, a severe attack of caterpillars completed the failure of the Apple crop. Raspberries, Red Currants and Strawberries were the best amongst small fruits. Black Currants were a failure.—*S. Barker, Clumber Park Gardens, Worksop.*

——The hardy fruit crops are, with very few exceptions, under average. The trees generally flowered magnificently, but the good prospects vanished with the advent of the caterpillars, which destroyed whole plantations in some neighbourhoods.—*Arthur C. Ashmore, Peel Hall Gardens, Mansfield Woodhouse.*

The Apple crop this season is uneven, and many varieties are barren. Those carrying good crops are Ribston Pippin, Worcester Pearmain, Lady Sudeley, Mr. Gladstone, Bramley's

Seedling, The Queen, and Newton Wonder. A severe attack of caterpillars when the fruit was setting did much damage to the leaves and fruit. The trees were abundantly laden with blossom, but a general weakness was noticeable in the stamens, and to this I attribute the poor crop more than to the ravages of caterpillars. *James Gibson, Walled Abbey Gardens, Worksop.*

The fruit crop is a disastrous failure in this district. There was a good show of blossom, but a windless weather, followed by a plague of caterpillars, destroyed nearly every thing. *J. R. Pearson and Sons, Lowdham.*

Apple trees bloomed very well, but after a long, dull spell the weather became suddenly very warm, and seemed to scorch the bloom. Worcester Pearmain, Cox's Orange Pippin, King of the Pippins, Edinville Seedling, Warner's King, and Lord Suffield are the best varieties with us. Pears are very scarce in this district. Cold, east winds prevailed when the trees were in flower. Raspberries yielded a fine crop in spite of want of rain. *Thomas Simpson, Newstead Abbey Gardens, Lynby.*

(*To be continued.*)

HOME CORRESPONDENCE.

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

American Blight. With me this pest is much more plentiful than I have ever seen it. Why, I am at a loss to understand. Even the Crab trees in the hedges are smothered with the insects, but how they got there I cannot understand. As to varieties of Apples that are the more susceptible to the pest, there is not much to choose. Warner's King has always been the most seriously affected sort here. Cox's Orange Pippin and Worcester Pearmain follow closely. While wounds on the main branches from canker are the favourite hiding places of the insects, the young shoots are not immune. I have used many so-called remedies including methylated spirits and tar, but none is so effective as Bunyard's Blight Cure, which is easily applied to the affected parts with a stiff brush. *J. Molyneux, Swanmore Park Farm, Bishop's Waltham.*

Fruiting of Chimonanthus fragrans (see p. 83). The production of a fruit of the "Wax Tree Sweet" at a recent meeting of the Scientific Committee of the Royal Horticultural Society would suggest that the fruiting of this shrub in England is rare. This is not the case. In Surrey, at Fox Oak, Walton-on-Thames, for three consecutive seasons, I saw a wall shrub and also a shrubbery specimen both fruiting freely, and the gardener, who has been there for many years, told me that it was quite usual to have a good crop of fruits. I sowed nine seeds and seven germinated, growing into healthy plants very quickly. In *Trees and Shrubs*, an abridgement of *Arboretum et Fruticetum Britannicum*, London states: "The plant is generally propagated by layers, but it frequently produces seeds, from which many plants have been raised." *H. C. Burbidge.*

SOCIETIES.

ROYAL HORTICULTURAL.

August 27.—Although the attendance was very small at the meeting held in the Drill Hall, Westminster, on Tuesday last, the exhibition was a creditable one for late August. The Joint Dahlia Committee, consisting of members of the R.H.S. Floral Committee and the National Dahlia Society, made nine awards to novelties. The Floral Committee recommended six Awards of Merit and awarded eight medals, including a Gold Medal for a splendid display of Montbretias.

The Fruit and Vegetable Committee awarded one medal to a collection of fruits. The Orchid Committee granted one First-class Certificate and two Awards of Merit to novelties, and awarded three medals to groups.

Floral Committee.

Present: Messrs. H. B. May (in the chair), R. C. Notcutt, Sydney Morris, John Green, E. A. Bowles, G. Reuthe, John Heal, C. R. Fielder, J. F. McLeod, A. Turner, W. H. Page, Thos. Stevenson, H. J. Jones, J. W. Moorman, Chas. Dixon, John Dickson, E. F. Hazelton, W. P. Thomson, Chas. E. Pearson, R. W. Wallace and E. H. Jenkins.

AWARDS OF MERIT.

Montbretia Queen Mary (see fig. 33).—This glorious variety grows about a yard high and bears many-branched spikes upon which numerous flowers remain open at the same time. The individual blooms are about 2 inches across, coloured light orange-yellow, with deeper orange reverse, and small crimson marks at the mouth of the tube. The stems are dark and stout.

FIG. 33.—MONTBRETIA QUEEN MARY.
(See Awards by the Floral Committee.)

Montbretia Nimbus.—This variety is of more upright habit than most, the side branches growing more erect than usual. The colour of the flowers is deep gold, with a ring of soft red-brown towards the base of the segments, and a few small markings of the same colour at the

mouth of the tube; a very free-flowering and effective variety.

Montbretia Queen Alexandra.—An erect, slender-stemmed variety which bears moderate-sized flowers that are of unusually good, rounded form. The colour is light apricot-yellow, with purplish-red markings at the bases of the lower three segments; a very elegant variety. This and the two following varieties were raised and shown by SYDNEY MORRIS, Esq. (gr. Mr. S. Henley), Earlham Hall, Norwich.

Gladiolus Prophetess.—A dainty variety with shapely flowers and good spikes. The blooms are cream white, with large red-brown blotches on the bases of the three lower segments. In form and texture the flowers are first-rate. Shown by Mr. J. S. PARKER, Upton Cheyney, Bitton.

Lilium Parkmanii Hayward's var.—A handsome form of a fine Lily. It was exhibited as the result of crossing L. speciosum magnificum with L. auratum macranthum. In general appearance it is like a glorified L. speciosum with the segments flattened out instead of being recurved. The colour is deep pink, with whitish margins and red-brown spots. One spike shown had a fasciated stem and carried a large number of blooms, but these were not so fine as those on an ordinary inflorescence. The flowers are very fragrant, with the scent of L. auratum but not so strong. Shown by Mr. P. S. HAYWARD, Pearls Farm, Great Clacton.

Lobelia Mrs. Humbert.—A useful, free-flowering hardy herbaceous Lobelia, with stems a yard high bearing a 15-inch spike of clear pink flowers. Shown by Messrs. LADHAMS.

MEDALS

Gold.—To S. MORRIS, Esq., Earlham Hall, Norwich, for Montbretias. *Silver-gilt Banksian.*—To Mr. L. R. RUSSELL, for stove plants. *Silver Flora.*—To Messrs. H. B. MAY AND SONS, for Ferns and Bouvardias. *Silver Banksian.*—To Messrs. CHEAL AND SONS, for Dahlias and shrubs; Messrs. LADHAMS, for herbaceous Lobelias and other hardy flowers; Rev. J. H. PEMBERTON, for Roses; Mr. G. REUTHE, for hardy plants; and to Mr. W. WELLS, June, for Delphiniums in great variety.

DAHLIAS.

The Joint Committee of the R.H.S. and the National Dahlia Society was as follows: Messrs. H. B. May (in the chair), J. Cheal, J. Green, J. A. Jarrett, D. B. Crane, H. J. Jones, Arthur Turner, C. H. Curtis, E. M. Jenkins, J. F. McLeod, and S. Mortimer.

The following Dahlias received the R.H.S. Award of Merit and the N.D.S. First-class Certificate:—

Marion Walton.—A charming garden Cactus Dahlia of great decorative value. The stems are long and stiff; the flowers of fair size, are coloured rich rose-pink, with buff shading at the bases of the central segments.

Purple Emperor.—A very handsome and distinct decorative variety. The flowers are of large size and carried boldly on stout stems. The segments are broad and the blooms regular in outline. The colour is deep purple tinted maroon with bright purple reverse, the latter colour showing up in the short, central segments.

Pennant.—This handsome Cactus variety has large blooms composed of slender incurving segments that produce an elegant effect. The colour is rich salmon-rose, a distinct shade.

Meridian.—A large Cactus Dahlia of fine form with graceful, slender-pointed segments and a neat centre. The colour is pale straw-yellow. Stems long and stiff.

These four varieties were shown by Messrs. J. STEVENSON AND SON.

President Wilson.—A huge and gorgeous decorative Dahlia of splendid form and with very long, stout stems that carry the flowers erect. The broad segments have their edges somewhat reflexed towards the ends, thus producing a pointed effect that adds to the fine appearance of the bloom. Shown by Mr. J. T. WEST.

Southern Star.—This is another addition to the "Star" group of Dahlias. This group consists of very useful varieties, particularly suitable for garden decoration and for supplying cut blooms. The variety has the same elegant form as its congeners, but the colour is scarlet, streaked with yellow, and shading into pink at the tips of the segments. Shown by Messrs. J. CHEAL AND SONS.

Pink Apollo.—A long-stemmed Paeony-flowered Dahlia. The blooms have two, sometimes three, rows of broad segments, and are over 6 inches across. The colour is clear pink.

Star of Stars.—A bold Collerette Dahlia. The flowers are of fairly good form and size, and carried on stiff stems. The broad segments are deep rosy-scarlet, tipped with pale yellow; the prominent "collar" is pale yellow with red shading.

Evelyn.—A showy Coloniette variety, with broad, slightly reflexing segments. The colour is maroon-scarlet, paler at the tips. The "collar" is composed of very narrow, pale yellow segments, those at inch long.

These three varieties were raised and shown by Mr. J. A. JARRETT, Anerley.

Orchid Committee.

Present: Sir Jeremiah Colman, Bart. (in the chair), Sir Harry J. Veitch, Messrs. Jas. O'Brien (hon. secretary), C. J. Lucas, W. H. White, W. Bolton, Walter Cobb, J. E. Shill, J. Charlesworth, Fred. Sander, W. J. Kaye, Richard G. Thwaites, J. Wilson Potter, Chas. H. Curtis, S. W. Flory and R. A. Rolfe.

AWARDS.

FIRST-CLASS CERTIFICATE.

Cattleya Hardyana alba, var. President Wilson, from Messrs. FLORY AND BLACK, Slough.—A magnificent variety resulting from crossing C. Dowiana aurea and a white-petalled C. Warscewiczii. The large, broadly developed flowers have pure white sepals and petals and glowing ruby purple lip with gold lines from the base to the centre, where, on each side are patches of light chrome-yellow.

AWARDS OF MERIT.

Cattleya Iris Andoldus variety (bicolor × Dowiana aurea), from J. ANSAULDO, Esq., Rosebank, Mumbles. A large, handsome variety, differing from others in having more of C. Dowiana aurea in the constitution, and in consequence a broader isthmus of the lip. The broad sepals and petals are pale sap-green, changing to primrose-yellow, and with faint, purplish veining. The lip is deep purplish-crimson with gold markings in the median area; column white.

Cattleya Ignea, Prince of Denmark (Dowiana aurea), from Messrs. CHARLESWORTH AND CO., Haywards Heath.—The flowers are formed like those of C. Dowiana, but with shorter petals. The sepals and petals are bright yellow, the lip ruby-crimson with gold veining from the base to the centre.

CERTIFICATE OF APPRECIATION.

Odontoglossum Ingall-Skinnerii × crinnium, from C. J. LUCAS, Esq., Warnham Court, Horsham (gr. Mr. Duncan). A new hybrid with well-formed flowers of medium size and showing O. Uro-Skinneri in a marked degree in the labellum. The sepals and petals are heavily barred with purple, the white ground showing through in narrow, wavy lines. The lip is white with purple blotches around the yellow crest and a band of small rose-coloured spots inside the margin in front.

GROUPS.

Messrs. STUART LOW AND CO., Jarvis Brook, Sussex, were awarded a Silver-gilt Flora Medal for an extensive and well-arranged group of showy species and hybrids. Cattleya Warscewiczii in several good varieties; Sophro-Cattleya Doris, S.-C. Blenheim and other Sophronitis crosses were effectively displayed with showy Laelio-Cattleyas, the best of which was L.-C. Sargent (L.-C. Lustre × C. Hardyana), a very large and handsome rose flower with broad, ruby-claret lip. New hybrids included Brasso-Cattleya Cuneata (B. Digbyana × C. Mrs. Myra Peeters), a large silver-white flower tinged with rose-colour on the broad, fringed lip being the darker shade.

Messrs. CHARLESWORTH AND CO., Haywards Heath, were awarded a Silver Flora Medal for a group of showy hybrids, including forms of their Laelio-Cattleya Appam, which secured an Award of Merit at the previous meeting; L.-C. Marina varieties with large and finely formed flowers, and several handsome varieties of their strain of Cattleya Serbia, all of good shape and bright colouring.

Messrs. HASSALL AND CO., Southgate, were awarded a Silver Flora Medal for a group of showy hybrids, the novelty in which was Brasso-Laelio-Cattleya Muriel (B.-C. Madame Chas. Maron × L.-C. Feronia), a large, light rose-coloured flower with greenish-yellow disc to the broad, fringed lip. Forms of Cattleya Nardi candidissima × Hardyana), one richly coloured form approaching C. Venus in the glowing crimson and form of its lip, and white-petalled varieties of Cattleya Hardyana were included in the exhibit.

Fruit and Vegetable Committee.

Present: Messrs. Joseph Cheal (in the chair), W. Poupart, Owen Thomas, W. H. Divers, J. C. Allgrove, Edwin Beckett, A. Markham, F. Jordan, A. Bullock, A. W. Metcalfe, E. A. Bunyard, George P. Berry, and the Rev. W. Wilks.

Messrs. S. SPOONER AND SONS exhibited a few dishes and baskets of Apples, the most attractive varieties being Lady Sudeley, Worcester Pearmain, and Williams' Favourite (Silver Knightian Medal).

An attractive Apple, shapely and with crimson streaks and shading on a pale yellow ground, named Maidstone Favourite, was shown by Messrs. G. BUNYARD AND CO.

LIVERPOOL VEGETABLE EXHIBITION.

AUGUST 23 AND 24.—The show held at St. George's Hall, under the auspices of the City Council and the Liverpool Horticultural Association, was a great success. The exhibits were about 2,000 in number, and in many cases the produce was of excellent quality.

The premier award, a Silver Challenge Vase presented by Alderman J. R. Grant, was won by the Walton Allotment Gardens Association, Seeds Lane, Fazakerley, and the ten plot holders who contributed to the collection each received a silver medal.

Two Silver Goblets were offered for the best collection of vegetables from any Association, arranged on a space of 50 square feet; one for allotments cultivated during 1918, in which the Waverley Allotment Association proved the winners, and the other for allotments cultivated prior to 1918, in which the Walton Allotments were successful. Both exhibits had a varied and excellent display of vegetables.

Five Gold Medals were given for individual plots. Those for plots cultivated prior to 1918 were won by Mr. W. SWINDELLS, Seeds Lane North District; Mr. J. H. WALKER, Green Lane Drive (South), and Mr. W. JACKSON, Bowring Park (East). For the plots broken up during the present year, Mr. E. G. MAYLETT, Sefton Park (South) and Mr. W. C. HUMPHRIES, Woolton (East) were the winners.

DUMFRIES AND DISTRICT HORTICULTURAL

AUGUST 24.—This Society held a show of vegetables and a gift sale of vegetables, flowers and fruit in St. Mary's Hall, Dumfries, on the 24th inst. There was a large attendance at the opening, presided over by Provost S. Arnott, Mrs. Gillespie, chairman of the Society; the show was opened by Sheriff Campion. Prize cups were presented by Provost T. S. Macaulay, Dumfries. The show of vegetables was an excellent one. A bronze medal was awarded to Mr. J. Cromie, June., York Place Nursery, Dumfries, for a collection of Potatos. The gift sale, which was on behalf of war charities, was handsomely supported by contributions from a number of gardens in the district.

In the open class the best collection of vegetables was shown by Mr. R. A. Gricor, Junr., Dalswinton Gardens.

The challenge cup presented by the proprietors of the "Dumfries and Galloway Standard" for the best collection of vegetables was awarded to Mr. W. KERR, Dalswinton Village.

The show of the Dumfries Burgh Allotment Holders' Association was held in conjunction. The Dumfries Burgh Cup for the champion allotment was won by Mr. J. BUSHEL, Crairs Road Allotments.

CROPS AND STOCK ON THE HOME FARM.

Wheat.

Much Wheat is being threshed owing to a lack of straw for thatching ricks of cereals and second-cut hay, of which much is being made. These second crops of hay are very good, and the weather is favourable for them. Owing to the tardiness of the authorities in fixing the price for Wheat for the current harvest, few sales are taking place; with the increase in wages, manures, and all feeding-stuffs, growers are naturally anxious. In fixing the price of Barley at 67s. per quarter, and Oats at 47s. 6d., the Government has treated farmers quite liberally. Many farmers state that Wheat is not threshing out in such good condition and quality as was expected. From observation of our own and other crops, I think there will be disappointment as to the quality of the grain, especially where the land was not well prepared. What I mean by quality is explained by the word "strength," a term used by millers to indicate that the endosperm of the Wheat should be hard and translucent, resembling horn when cut across. Such Wheat contains "strength," much appreciated by the miller, yielding flour which produces loaves that are large and spongy in texture. In "weak" Wheat the floury part of the grain is white and opaque, and looks like chalk when cut. Grains with such a starchy content are usually soft and not so desirable as the stronger grains.

The cold, sunless weather in April and early part of May no doubt caused many plots to be affected by rust (Puccinia graminis), thus checking the progress of the Wheat plant. The extreme dry weather during the latter half of June and the early part of July checked the filling out of the grain. Although Wheat does not require so much moisture as other grain crops, a sufficiency is needed to swell the grain to its fullest extent. Some samples are termed "hoaty," as the centre of the grain is not filled out. It is difficult to imagine a Wheat crop of the finest quality when the leaves have been ruined by this disease. Large breadths of spring-sown Wheat were cultivated this season, especially on newly-ploughed pu grass land, mainly of the Red Nursery variety. The demand at that time appeared to be more for Wheat than Oats and farmers responded readily to the request to increase the supply of this cereal. In my own case, nine acres of grass were ploughed and sown, on March 6, with Red Nursery Wheat, which has given an excellent crop of high quality. The yield of this Wheat is not equal to that of autumn-sown plots of other varieties, but where a late growth is required this is an excellent variety to sow.

Cleaning Stubbles.

Directly harvest is completed the cleaning of stubbles usually occupies the horses. With the spell of dry weather usually experienced in September a good opportunity is afforded of getting rid of troublesome weeds, which are all too common this season. In many cases this is owing to the extra grass, old Sainfoin leys, and rotation grasses being ploughed. From those latter we always expect a full Couch crop. For tearing up stubbles of this class nothing is so useful as steam tackle for scarifying the land twice in opposite directions. Then with the aid of sun and wind, horse cultivators and harrows, the loll of the weeds and stubble can be gathered, burnt in small heaps, and the ashes spread over the soil.

Sunflowers.

The recent spell of hot weather preceded by the copious rainfall in the middle of July, has been all in favour of rapid growth and the development of the flower heads, which are, in the case of the Giant Russian variety, some 15 inches in diameter, now well set with seed. In my acre plot half was sown with seed and the remainder dibbled with seedlings raised in boxes in a cold frame and planted during the middle of May. Although the former batch has grown more vigorously (now 7 feet high the frame-raised plants are more uniform in growth, and perfecting a full seed crop which should ripen well. *E. Molyneux, Swanmore Park, Bishop's Waltham.*

MARKETS.

COVENT GARDEN, August 28.

Cut Flowers, &c.: Average Wholesale Prices

	s. d.	s. d.
Arums— (Richardias), per doz. bl'ms	9 0-	12 0
Asters, per doz. bun.—		
— mauve..	4 0-	8 0
— pink .	4 0-	8 0
— white ..	6 0-	12 0
— single, various, per doz bun	3 0-	6 0
Carnations, per doz.		
— blooms, best American var	1 6-	3 0
Chrysanthemums, bronze, yellow, white, per doz blooms	8 0	18 0
— blooms, white and yellow, per doz	3 0-	9 0
Coreopsis, per doz. bunches ..	1 6-	2 6
Cornflower, blue, per doz. bunches	2 6-	3 0
— pink, per doz. bunches	2 6-	3 0
Croton leaves, per bun.	1 3-	1 6
Daisies, large white, per doz. bun	3 0-	6 0
Delphiniums, various, per doz bun	3 0-	5 0
Gaillardias, per doz. bunches	3 0-	5 0
Gardenias, per box (12's)	4 0-	6 0
— (18's)	2 0-	3 0
Gladiolus Americ	4 0-	6 0
— Brenchleyensis, scarlet, per doz. stokes .	2 6	3 0
— Halleyi, per doz stokes .	5 0-	5 0
Gypsophila, double plena, per doz bun	6 0	18 0
— white, per doz. bunches	6 0	10 0
Heather, white, per doz. bun	3 0	9 0
Honesty, per bun	1 0	2 6
Iceland Poppies, per doz. bunches	2 0-	3 0
Lavatera, white and pink, per doz bunches ..	4 0-	6 0
Lilium speciosum album	5 0	7 0
Liliums, con.—	s. d.	s. d.
— longiflorum	long 15 0-	18 0
— rubrum, long .	4 0-	6 0
— short, per doz.	3 6-	4 6
Marguerites, yellow, per doz. bunches	3 0-	5 0
Montbretia, per doz bun. ..	6 0-	9 0
Nigella, per doz. bun	2 0-	3 0
Orchids, per doz.—		
— Cattleyas ..	12 0-	18 0
— Odontoglossum, per doz. ..	3 0-	3 6
Pelargonium, double scarlet, per doz bunches...	4 0-	6 0
— white, per doz. bunches ..	5 0-	10 0
Phlox, per doz. bun.	4 0-	6 0
Roses, per doz blooms—		
— Frau Karl Druschki ..	1 6-	2 6
— Hugh Dickson, per bunch ...	1 0-	2 6
— Ladylove ...	2 0-	4 0
— Liberty ...	1 6-	3 0
— Madame Abel Chatenay ...	1 6-	2 0
— Mrs John Laing, per bunch ...	1 0-	2 6
— Niphetos ...	1 6-	2 6
— Richmond ...	1 6-	3 0
— Sunburst ...	2 0-	3 0
Scabious caucasica, per doz. bunches	5 0-	6 0
Scabious (double) various, per doz. bun	3 0-	5 0
Statice incana, per doz. ..	12 0-	15 0
— latifolia, per doz bun. ..	6 0-	12 0
— white, mauve, yellow, per doz bunches ..	6 0-	10 0
Stephanotis, per 72 pips .	3 0-	4 0
Stock, English, per doz. bunches,..	9 0-	15 0
Sultan, white, mauve, yellow, per doz bunches ..	3 0-	6 0
Sweet Peas, various, per doz. bun	3 0-	4 0
Viola cornuta, per doz. bun.	2 6-	3 0

Remarks. Trade continues very quiet in the cut flower market, and there is nothing to show any trend upwards. Gladioli Americus and Halleyi are about the Carnations are in good firmer this week.

Vegetables: Average Wholesale Prices

	s. d.	s. d.
Beans:—		
— French, per box.	5 0	—
— Scarlet Runners, per bus. .	2 0-	3 6
Beetroot, per doz.	1 0-	1 6
Cabbage, per doz	2 6-	4 0
Carrots, new, per doz bunches ..	1 0-	1 6
Cauliflowers per doz	4 0-	6 0
Cucumbers, per flat (from 2 0 2-4 doz)	2 0-	3 0
Garlic, per lb.	0 7-	0 10
Greens, per bag	4 0-	7 0
Herbs, per doz bun.	2 0-	4 0
Horseradish per bun.	2 6-	4 6
Leeks, per doz bun.	4 0-	6 0
Lettuce, Cabbage and Cos, per doz	1 6-	3 0
Mint, per doz. bun.	1 0	3 0
Mushrooms, per lb.	3 0-	4 0
— outdoor, per lb	1 0-	2 0
Mustard and Cress, per doz punnets	1 0	1 3
Onions, Egyptian, per cwt.	35 0-	36 0
— spring, per doz. bun. ..	0 8-	1 2 0
— new Spanish per case ..	2 0	
Parsley, per bunch	0 6-	1 0
Peas, English, per bus.	12 0-	15 0
Radishes, per doz. bunches .	2 0-	2 6
Rhubarb, per cwt.	28 0	—
Shallots, per lb. ..	0 6	—
Spinach, per strike	1 6-	2 0
Tomatos, per doz lbs.	8 0-	9 0
Turnips, new, per doz bunches .	5 0-	7 0
Vegetable Marrows, per doz	2 0	4 0
Watercress, per doz	0 0	9 1/2

Remarks. The apple continues to be fairly well supplied with Apples, both for cooking and dessert varieties, but supplies of Pears are limited. Plums and Greengages have shown a slight increase in supply this week. Home-grown Melons are now practically at an end, but Canada has a few medium size fruits available. The first shipment of Grapes are expected to hand. Peaches and Nectarines are in short supply this week, but all varieties of Grapes are fairly abundant. Supplies of Tomatos have shown a slight increase, and Mushrooms, Cucumbers, Marrows, and Cabbage are scarce, especially the last. Scarlet Runner beans are plentiful, but Cauliflowers somewhat scarce. Supplies of Peas are limited. *E. H. J., Covent Garden Market, August 28, '18.*

ENQUIRY.

Druidical Plants.

I shall be very grateful if your readers will kindly (1) mention any plants that are associated with Druidical rites or that are known to have been noticed or used by the early Britons, and suitable for planting in this connection, and (2) refer me to any accessible books on plant lore that would deal with the subject. *Welsh Reader.*

Obituary.

Peter Loney.—We regret to announce that Mr. Peter Loney died suddenly at the residence of his son, Dr. Loney, Wrenbury, Cheshire, on the 11th inst. Mr. Loney was head gardener at Marchmont, Berwickshire, the residence of Sir Hugh Hume Campbell, and he was afterwards appointed overseer on Sir Hugh's Marchmont and Hume estates, in which capacity he acted for many years. Over twenty years ago he retired, and took up his residence in Edinburgh. For some years he was honorary secretary of the Scottish Horticultural Association, of which he was an honorary life member. He was in his 85th year.

Andrew Thomson.—We regret to announce the death, on August 21, of Mr. Andrew Thomson, a leading amateur horticulturist of Galashiels, and for many years president of the Galashiels Horticultural Society. Mr. Thomson, who was headmaster of the Galashiels Burgh Schools, was 66 years of age.

ANSWERS TO CORRESPONDENTS.

Barberries: *M. E. H.* The fruits of Berberis Aquifolium are edible, but not particularly palatable. The fruit of the common, wild Berberis vulgaris, are edible, but rather arid. Most of the Barberry fruits make good preserve and are sometimes employed for making into jelly.

Names of Fruits: *Ignorammus.* Plums: 1, Victoria; 2, Belgian Purple; 3, Prince Engelbert; 4, Prince of Wales; 5, Monarch.—*J. E.* Apple, Irish Peach; Pear, Hessel; Plum, Rivers' Early.

Names of Plants: *H. S.* 1, Clethra alnifolia; 2, Koelreuteria paniculata; 3, Arbutus Unedo; 4, Abelia grandiflora; 5 and 6, varieties of Hibiscus syriacus. *G. H. E.* Colquhounia grandiflora. *B. W.* Artemisia vulgaris. *C. D.* 1, Exochorda grandiflora; 2, Rhododendron myrtifolium; 3, Cornus Mas; 4, Holboellia latifolia; 5, Skimmia Laureola; 6, Forsythia viridissima; 7, Cornus capitata (?).—*A. N.* Lycium chinense (see answer under "Wayside Shrub").—*C. G.* 1, Old Monthly Rose; 2, probably Lathyrus amphoricarpus.

Celery Leaves Injured: *S. R.* The leaves are attacked by Celery Leaf Blight, Cercospora apii. Collect and destroy all diseased leaves, and, next season, spray the young plants with a solution of ammoniacal carbonate of copper.

Potatos on Newly Dug Pasture: *Ploughman.* There is no royal road to combatting wireworm in old pasture; an application of gas-lime, when the ground is fallow, is the best means of destroying this pest. Each succeeding season you will have less trouble in this respect, as a proportion of the grubs will hatch into the beetle stage each year, and they rarely return to cultivated ground. With respect to manures, as you are unable to obtain stable dung, dress the ground with superphosphate as soon as it is dug in the spring and apply sulphate of ammonia at the time of planting the seed tubers. If preferred, you can substitute basic slag for the superphosphate, but this fertiliser should be applied in the autumn, as it is very slow in action. Use superphosphate at the rate of 3 ozs. to the square yard, and about half that amount of sulphate of ammonia.

Wayside Shrub: *H.* So far as we are aware, the fruits of the wayside shrub (Lycium chinense, better known as L. barbarum) are not edible. The fruits of many solanaceous plants are poisonous and others are unpalatable, but fruits of a few cultivated kinds are largely used for food, notably Tomatos, Aubergines, Capsicums, Chilies, and Cape Gooseberries.

Communications Received.—R P, Columbo—C F, P, W, P, S—H G, J C, W H L, H B—W S & A Sons—J W P, A B S, A H G—H M H A S, E M G, W L A, Ireland T P—J W O S—Major H—W H, D J, G W—J A P—J F, W R—C W H—F E, Dom N, D W A J, G B, S & S F J C—J D E, M—R A M—W B H.—A. B, L.

THE
Gardeners' Chronicle
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CONTENTS.

ILLUSTRATIONS.

ANGELICA.

THIS summer the grievance of our war-time food supplies has been aggravated by the general enhancement in price of fresh fruit, whilst the shortage of this season's harvest of Plums, Pears and Apples promises to make matters increasingly difficult until the crops of next season mature. Thus it has fallen to the lot of Rhubarb to fill the gap to such an extent that its higher price and lower quality are much in evidence. The lucky grower who possesses acres of Rhubarb fields finds himself comparable to the owner of a gold mine. The greengrocers' shops show very plainly how the rapid realisation of the gross profits of present opportunity are somewhat straining the productive capacity of the Rhubarb fields during the coming year by reason of prolonged and excessive gatherings, which are incompatible with the rest period so necessary after midsummer for recovery of growth and preparation for proper crop development next spring.

Whilst Rhubarb, our emergency substitute for bush and tree fruits, is thus being made to supply the wants of the multitude, not a few of us are inclined to revolt and long for some amelioration of this too frequent component of our daily meals. Rhubarb jam and Rhubarb tarts have become odious to many palates even when doctored with ginger, lemon, and common flavouring essences. A blend of Raspberry and Rhubarb has been the most popular standby, but even such a compound is a luxury often not obtainable.

Accordingly the times seem fit for the rehabilitation of the "herb Angelica" in some part of its old-time repute; unfortunately, it is nowadays seldom to be found either in the cottager's garden patch or in the best old manor house gardens; it is quite unknown to the war-time allotment holder. Its best use by us, when it may be classed as a food rather than a mere condiment, is woefully neglected or unknown.

Archangelica officinalis (garden Angelica) merely lingers inconspicuously to-day amongst the stock-in-trade of our surviving medicinal herbalists, generally in the form of a dry, powdered root. It is known to modern cooks and confectioners only in the form of crystallised "candied Angelica," prepared from split lengths of the flowering stems cut in the month of May. Botanists and antiquarians have written learnedly about this deliciously aromatic herb and old-time food plant, but nevertheless its food and condiment value have practically been lost to us following upon its disuse in medicine and its banishment from our kitchen gardens, which occurred a little earlier than 1889, when, however, the second edition of the *Garden Cyclopaedia* still represented the herb as "a well known plant in most [illegible] gardens."

The "herb Angelica" belongs to the Natural Order *Umbelliferae*. Several of our common wild Umbelliferous plants have some considerable [illegible] in growth, [illegible] garden Angelica, which is sometimes found wild, but is only a garden escape. Our wild native plant, Angelica sylvestris, [illegible] Hemlock [illegible] Water Hemlock, [illegible] Water Dropwort [illegible] common plants [illegible] with difficulty classified [illegible] produces leaves and fruits [illegible]. However [illegible] of small Angelica [illegible] Umbelliferae, with its pervading aromatic odour, different from Fennel, Parsley, Anise, Coriander, Chervil or Sweet Cicely; one [illegible] stronger compared to Musk, but others to Juniper; *de gustibus non est disputandum*, still it is unique. The taste of the juicy raw stem is at first sweetish and slightly bitter in the mouth and then gives a feeling of glowing warmth. The leaflets or blades of the leaves are too bitter to be consumable, unless blanched like Celery. The foliage is bold and pleasing; the leaves are bi-pinnate compound, and the leaflets are serrated; the petioles are long and stout, but differ from the "sticks" of Rhubarb in being hollow.

If a small quantity of leaf-stalks (leaves) of Angelica be cooked with "sticks" (petioles only) of Rhubarb, the flavour of the compound will be acceptable to many who do not relish plain Rhubarb. The quantity of Angelica used may be according to circumstances, conditions, and individual taste. If the stems or stalks are young and juicy they may be treated like Rhubarb and cut up small, the quantity used being in any proportion between 5 and 25 per cent. If the stalks are more or less fully developed, or even rather old and tough, they can be excellently well used in economically small quantities for flavouring large quantities of stewed Rhubarb or of Rhubarb jam, being added in long lengths before cooking and removed before serving at table.

The confectioner's candied Angelica may be similarly utilised, but it is extravagantly expensive and not so good, whilst the [illegible] growth in spring-time of first-year Angelica, with thick, stout leaf-stalks [illegible] flowering stems, is very [illegible]. If the flowering stem be cut [illegible] tender early in May, later leaves [illegible] plentifully available for use [illegible] part of the Rhubarb crop.

It is desirable that the amateur cultivator or allotment holder should be afforded better information about the uses and cultivation of the Angelica plant than what he may be able to acquire by much book reading. This herb is biennial in the botanical sense of that term, Archangelica officinalis (likewise the inferior Angelica sylvestris) dies after maturing one good batch of seeds, but only very advanced seedlings fruit in their second year; the third year of growth commonly completes the full period of life. There is another species, Angelica heterocarpa, which is credited with being truly perennial; it flowers a few weeks later than the biennial species, and is not so ornamental in its foliage. The seeds of A. officinalis ripen in July, and it is preferable to sow them in a seed bed in August or September rather than in the following March, as their germinating capacity rapidly deteriorates. A very slight covering of earth is best; young seedlings, but not the old plants, are amenable to transplantation. They may be grown in any soil or garden situation, if not too dry or much overshadowed by trees. When planted out in small clumps of only three or four seedlings to mature in chosen spots, they should be not less than 9 inches apart, but when planted for quantity maturing in beds of large dimensions twice as much space will be suitable. The plants are quite hardy and require no protection in winter.

The virtues of the herb are quaintly praised by old writers, and the name itself, as well as the folk lore of all North European countries and nations, testify to the great antiquity of a belief in its merits as a protective against contagion, for purifying the blood, and for curing almost every conceivable malady. It is said to be especially efficacious as a "carminative" in the original sense of that term, acting "as by incantation" or magic, that is to say, with wonderful suddenness. Amongst the more modern herbalists of Western Europe Inula Helenium, the famous "Elecampane" (variously spelled and pronounced), seems to have rivalled and ousted Angelica, perhaps on the principle that a drug which is nasty must be medically superior to anything more palatable. Elecampane, in the form of the candied root, or

a very sugary confection thereof, somewhat resembles candied Angelica in flavour.

In Courland, Livonia, and the low lakelands of Pomerania and East Prussia wild-growing Angelica abounds; there, in early summer-time, it is the custom of some peasants to march into the towns carrying the Angelica flower-stems and to offer them for sale, chanting some ancient ditty in Letzish words, so antiquated as to be unintelligible to the singers themselves. The chanted words and the tune are learned in childhood, and are to be attributed to a survival of some Pagan festival. The Finns esteem the herb also as a food, as well as otherwise; they eat the young stems baked in hot ashes, and an infusion of the dried leaves is drunk either hot or cold; the flavour of this decoction is rather bitter; the colour is a pale greenish-grey, and the odour greatly resembles China tea. The roots of Angelica are, or were, used medicinally either fresh, or dried and powdered, in which latter form one dram, a little more or less, constitutes a dose.—*G. Harlstone Hardy (Major), Twickenham.*

a dark violet shade, the central part being bright claret-red with some light orange markings. The side lobes of the lip are light rose colour marked with fine purple lines; the fleshy column is white.

The variety King Edward VII., with yellow sepals and petals tinged with rose colour and with a magenta-rose coloured lip, was illustrated in *Gard. Chron.*, October 16, 1909, fig. 114.

CATTLEYA SUNSET

A flower of a new cross between C. Dowiana aurea and C. Tankervilliæ (bicolor × Rex) is sent by C. J. Lucas, Esq., Wareham Court, Horsham (gr. Mr. Duncan), in whose garden it was raised. In the chief features it resembles a very fine C. Iris, but the introduction of C. Rex has produced a broader expansion of the side lobes of the lip which are apricot yellow outside and veined with purple inside—and a fine development of the purplish crimson front lobe, which has a narrow, white, undulated margin. The narrower middle part of the lip is bright yellow, with crimson lines. The sepals and petals are apricot yellow tinged and slightly veined with rose-crimson. The column is white flushed with purple and is very fleshy.

THE MARKET FRUIT GARDEN.

August was a glorious month, with more than the average amount of sunshine and less than the normal rainfall. The opening week was wet, but from the 8th to the 24th inclusive there was an interval without any measurable quantity of rain, the weather being fine and warm. The total fall for the month in my garden was only 1·27 inch, which fell on 9 days, a great contrast to 5·66 inches on 20 days in August, 1917. But the contrast was even more satisfactory in the matter of wind. Last year there were two severe gales in August which brought down hundreds of bushels of Apples and many Plums. All available buildings were filled with windfalls, for which an adequate supply of "empties" could not be obtained. This year there have been remarkably few windfalls, the season's immunity from gales being quite exceptional. The weather has, moreover, been favourable for gathering the crops and for hoeing, and the light crops have necessitated so little time being devoted to the former operation that there has been ample opportunity for keeping down weeds. The plantations are therefore unusually clean for the time of year.

The extraordinary failure of the fruit crops is realised more strikingly in the packing and marketing department than anywhere else. Usually at this season we are accustomed to pack daily at high pressure, and often send three times to the railway station day after day. This year packing has seldom occupied more than two days a week, and the van makes one journey to the station on each occasion. As varieties ripen they are picked and marketed direct, and the fruit-room is empty.

PRUNING BLACK CURRANTS.

So little time being required for picking and packing, there are opportunities for doing work which usually has to be neglected. The pruning of Black Currants is a case in point. Our practice has always been to cut back the bushes for the first two years after planting, but after that they have received no attention from the knife, more urgent pruning work occupying the time of the few skilled men. This year some of the bushes have been dealt with, and they certainly

FIG. 34.—FRUITS OF PYRUS YUNNANENSIS.

ORCHID NOTES AND CLEANINGS.

CATTLEYA IRIS ANSALDO'S VARIETY.

Cattleya Iris, obtained by crossing C. bicolor and C. Dowiana aurea, was first recorded in *The Garden* as *Chron.* 8 September 28, 1901, p. 250. The hybrid proved to be one of the most distinct and popular of Orchids, and good types of it are eagerly sought to-day as they were when it first made its appearance. Considerable variation is seen in size and colour as displayed in different forms of the cross, but hitherto the shape of the lip, with its more or less restricted isthmus in the centre and its short side lobes at the base, has been inherited from C. bicolor.

In the case illustrated in fig. 36, for which J. Ansaldo, Esq., Rosebank, Mumbles, Glamorgan, received an Award of Merit at the meeting of the Royal Horticultural Society on August 27, the influence of C. Dowiana aurea is especially pronounced, with the result that the segments are broader than usual and there is a greater expansion of the labellum. The sepals and petals are pale sap-green, changing to primrose-yellow, with a pale rose flush and veining of light purple. The labellum is deep ruby crimson with

TREES AND SHRUBS.

PYRUS YUNNANENSIS
(syn. P. VEITCHII).

We owe to Mr. E. H. Wilson the introduction to gardens of this interesting and attractive tree. He found it during one of his early journeys in China on behalf of Messrs. J. Veitch and Sons. Its chief beauty is its rich crop of fruits, which are at their best in September. The fruits are a rich, dark red, dotted with pale spots, almost globose, and about half an inch in diameter. The flowers are white, but the spring beauty of the tree is inferior to that of our best flowering Pyruses. It is evidently a very hardy tree, and thrives in good, loamy soil in full sunshine. Messrs. J. Veitch and Sons showed the species a few times at the R.H.S. fortnightly meetings under the provisional name of Pyrus Veitchii, and on October 8, 1912, when it bore a remarkable crop of fruits, it was given an Award of Merit.—*W. J. B.*

look all the better for the attention. Neglected Black Currant bushes are somewhat puzzling subjects to prune. The object is, of course, to cut out old wood and make room for new, but it is often difficult to remove the one without a considerable amount of the other. The work is bound to involve the sacrifice of a portion of next season's crop, but it is hoped that it will produce more young wood for the crops of future years and give the bushes a longer lease of life. Unpruned bushes crop well, but I believe that they wear out prematurely, whilst they grow so tall as to be a nuisance in a mixed plantation of trees and bushes. My chief aim in this pruning has been to cut back some of the old wood to within a few inches of the ground, in the hope of inducing the bushes to throw up some strong, young shoots: they never do this freely on my land, which does not suit the crop.

In some of the plantations the bushes were planted only 3 feet apart in the rows, with the object of cutting down alternate specimens at intervals, and so keeping them perpetually furnished with young wood, and possibly defeating the bud mite. Unfortunately the plan has never been carried through. It has been put off from year to year, because it seemed a pity to cut down bushes that were bearing fully. Last year, however, a few bushes were treated as an experiment, and the result is so favourable that I have now cut down alternate bushes in the greater part of one plantation that is not too old to give the system a fair test. There is no doubt about the success of the plan with regard to the formation of new wood. Plenty of very strong shoots are formed, and the bushes are quite rejuvenated. It remains to be seen, however, whether this wood will remain free from bud mite. I shall not be surprised to see it badly infested, as the pests seem to prefer young shoots. Nor am I at all sure that there will not be a proportion of reverted bushes as a result of the treatment. Some of those cut back last year look suspicious.

DEAD WOOD IN PLUM TREES.

The opportunity is now being taken to prune the older Plum trees. It would be too severe, of course, to deal with young trees, on which the leaders have to be shortened, but older trees require nothing beyond the removal of dead and overcrowded wood, and this can be done at any time of the year. It is, indeed, much easier to distinguish dead wood whilst the leaves are still on the trees. There is a great deal of it, particularly on trees of Czar, as a result of brown rot disease, of which there has been a particularly severe attack this year, here and elsewhere. Silver-leaved branches also should always be cut out early, as they cannot be distinguished when the leaves change colour in autumn. We have already gone through the plantation with this object, marking trees that show silver-leaf all over to be grubbed, and sawing off diseased limbs where the trouble is restricted to part of the tree. This disease also has spread seriously this year. The variety Victoria, as usual, is affected worst, but the trouble is found also in Czar, Pond's Seedling, and a few trees of Monarch.

THE COBNUT CROP.

There is a light crop of Cobnuts, but it is better than was expected. There was a heavy crop last year, and Cobnuts seem to cycle, with many varieties of Apples and Plums, the habit of bearing in alternate years. There was, however, a stronger reason for expecting a very light yield in the scarcity of catkins. Most of the trees carried plenty of female blooms, but the majority were entirely bare of male catkins. At the same time I never remember to have seen catkins so profuse on the wild Hazel in the hedgerows adjoining the plantation. With the object of seeing whether the wild pollen was capable of fertilising the Cobs, I examined a number of the female blooms of the latter under the microscope in March. Where the blooms were taken from trees separated from the hedgerow only by the width of a headland they were seen to be freely sprinkled with pollen grains. Blooms taken from trees more towards the centre of the plantation showed only a few pollen-grains, and in many cases none. The crop now hanging seems to bear out this observation there being most Nuts on the trees near the hedgerow, whilst there is a plentiful sprinkling further in the plantation. At the time when the pollen was ripe there was a strong wind blowing from the hedgerow across the plantation, so that conditions were favourable to the wild pollen reaching the cultivated trees. Some of the wild catkin bearing branches were cut off and hung in the Cobnut trees, but there is no evidence to prove whether this has been of use or not. I have little confidence in the plan, because most of the pollen is shed in the process of collecting the bunches, and the catkins soon die after they are taken from the trees. *Walter Cooper.*

of Peas is to allow plenty of room both between the plants and the rows. This year we grew eight rows in trenches, each 110 yards in length. Besides the variety named above, we grew Duke of Albany, Quite Content, Distinction, and Autocrat, which form a good succession. By allowing ample room between the rows, other crops, such as Beetroot, Carrots, and Cauliflowers, can be successfully grown between Peas. *Frank Beckett.*

CROPPING GLASS HOUSES WITH VEGETABLES IN WINTER.

In view of the scarcity of fuel for glasshouses, many kinds of outdoor flowering plants will be missed from most establishments during the coming winter, and many houses will be free for the cultivation of useful food crops. It may be necessary to utilise a little fire heat, but only the minimum amount should be used. Few crops pay better than Tomatos in winter, provided the plants are sufficiently advanced to ensure a full crop being set in November. Plants for this purpose should be ready for transference

FIG. 55.—PEAS GROWN IN TRENCHES AT ALDENHAM HOUSE GARDENS. THE VARIETY IS DISTINCTION; THE CARROT MATCHLESS PERFECTION.

ON INCREASED FOOD PRODUCTION.

PLANTING PEAS IN TRENCHES.

Though the cultivation of Peas in prepared trenches by no means an original method, it is not nearly so generally practised as it deserves, and there are some excellent reasons why it should be more widely adopted. Peas grown in this way are practically proof against drought, and a potato manure. The value of trenches lies in the fact that by excavating the soil to a good depth, and filling in the excavation either with suitable soil or well-decayed farmyard manure, the roots are provided with a deep root-run, and in dry weather can be supplied much more readily than when the plants are growing on the flat. We cultivate practically the whole of our culinary Peas in this way, with the best possible results. At the time of writing (August 27th) we are picking a plentiful supply from a long row of "Edwin Beckett," which we commenced to gather from the first week in June. The present yield is, of course, from secondary growth.

The chief point to observe in the cultivation of Peas is to allow plenty of room both between the plants and the rows. This year we grew eight rows in trenches, each 110 yards in length. Besides the variety named above, we grew Duke of Albany, Quite Content, Distinction, and Autocrat, which form a good succession. By allowing ample room between the rows, other crops, such as Beetroot, Carrots, and Cauliflowers, can be successfully grown between Peas. *Frank Beckett.*

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through the surface, apply a light top-dressing of rich soil. The top growth should be carefully thinned, stopped and tied as necessary throughout the winter. Crowding of the plants should never be permitted; remove deformed fruits as soon as they appear. A temperature of 70° is suitable, but it may be allowed to drop to 65° during cold nights.

French Beans may be grown in quantity during the late autumn, but they are seldom profitable sown later than the middle of October. Pots 7 inches in diameter are best for late crops, and the plants should be grown to within 18 inches of the roof-glass in a house having a temperature of 60°. Good results may be obtained from sowings made early in January, either in beds or pots. From this sowing pods should be ready to gather about the last week in February, when choice vegetables are scarce. In order to maintain a regular supply, a fresh sowing should be made every ten days, and this crop should prove remunerative as time advances in spring and less fire-heat becomes necessary. The Belfast and Osborn's Forcing are good early varieties and prolific croppers.

Glass-houses may also be used in winter for the growing of salad plants, such as Lettuce and Endive, without fire-heat, except when very severe frosts occur, when sufficient heat should be afforded to protect the crops from injury. For winter crops several sowings should be made in September and the seedlings transplanted as soon as they are large enough to handle. If once allowed to become drawn in the seed beds they will be of very little value as a winter crop. Rich soil is necessary to ensure quick growth, and, during the autumn and early winter, a liberal supply of soft water should be given. Golden Ball, Little Gott, Monument, and Maximum are suitable sorts. The last two varieties are good for autumn and winter cropping in the order named.—*John Dunn.*

FRUIT REGISTER.

A NEW LATE RASPBERRY.

MESSRS. STORRIE AND STORRIE, Glencarse, Perthshire, have sent us fruiting sprays of their new Storrie's Excelsior Perpetual Raspberry. In this variety the canes begin to produce ripe fruits from the top laterals downwards, and each succeeding lateral, as in the samples received, shows ripe fruit at the apex, flowers at the base, and fruits in different stages of development between. The result is that ripe fruit may be gathered continuously during summer and autumn. The fruit is large and finely flavoured, and the canes will grow to a height of 7 to 8 feet in ordinary garden soil.

PEACHES ON WALLS IN THE OPEN.

ONE of the best early Peaches on our open walls facing south-east is Duke of York, which ripened medium-sized fruits of good flavour and colour at the end of July. Peregrine followed a fortnight later with handsome, highly-coloured, good-flavoured fruits, some of which weighed 8 ounces each. This variety is one of the best Peaches for growing both indoors and in the open. Owing to cold winds [illegible] and other varieties were affected by [illegible] This variety was immune, and has [illegible] with free from red spider. The variety Barrington has, up to this season, done well, but the dry weather of June retarded its growth, and there are very few fruits. The same is true of Crimson Galande, one of the best outdoor Peaches in ordinary seasons. Trees of Alexander Noblesse are carrying fair crops of good sized fruit, and have made good growth free from red spider. Royal George is not a success here; the fruit is woolly and the tree is very susceptible to blight. Violette Hâtive is our best and latest variety; the tree is quite hardy and never fails to carry a medium crop of good sized, well-flavoured fruits. Early Rivers Nectarine ripened choice fruit on a south wall at the end of July. All the trees are free from blister, having been sprayed with Bordeaux mixture a short time before the flower buds expanded.—*A. B. Wadds, Englefield Gardens, Reading.*

NOTES ON IRISES.

IRIS SPURIA.

IT has long been apparent that the name of spuria covers a number of local forms of an Iris which is widely distributed over Europe, and, indeed, in Asia. Herbarium specimens are of small value in comparing the various forms, for the growth of the different plants varies considerably according to the conditions of soil and climate in which they are grown, and, moreover, the same plant may differ appreciably from one season to the next, as conditions of heat and moisture are seldom identical in two consecutive years.

It has at length become possible to obtain plants from most of the known European habitats of this species, and to grow them side by side under conditions much more nearly identical than those in nature. It cannot be certain that this comparison is entirely satisfactory, for there still remains the possibility that some of those forms vary from seed, and that the one or two plants collected in any locality were therefore not representative of only one of the forms to be found in that district. However, bearing in mind this possibility, which can only be investigated by raising a number of seedlings from each locality, the various local forms seem to fall into three groups.

I. The plants are dwarf and slender, and usually produce only two flowers. The reduced leaves on the stem are narrow and tapering, and entirely clothe the stem. This form is found near Agde, in the Department of Hérault, in the South of France, near l'Hermenault in Vendée on the west coast of France, and near Madrid.

II. The plants are stouter and slightly taller than those of the first group, and the stems produce one or two lateral flowers set close below the terminal head. The reduced leaves are broader and less gradually tapering, but in this group, too, they entirely clothe the stem. Specimens of this form are found in the marshy meadows between Hyères and the Mediterranean, on the Danish island of Saltholm, in one locality in the fens of Lincolnshire, and near Algiers. I have not myself visited the habitat in the fens, but there seems no doubt that the plant is really wild there, though it was unknown to Bentham and Hooker.

III. The third group consists of taller plants, with the clusters of flowers and the reduced leaves set much further apart on the stems, so that the internodes are always uncovered for some distance. This form occurs at Trebur, near Darmstadt, and also near Perth, and in Hungary, and it is presumably the same form that was named subbarbata by Joo.

There is practically no variation in the actual flowers, though the shade of blue differs a little in different specimens.

So far as my experience of the plants goes, I should be inclined to expect that seedlings of groups I. and II. might be found to be indistinguishable, or to contain specimens of both forms, but that III. would remain distinct.—*W. R. Dykes, Charterhouse, Godalming.*

The Week's Work.

THE KITCHEN GARDEN.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

Ripening Onions.—The long period of bright, sunny weather has been favourable to the maturation of Onions generally. All thick-necked bulbs, which never keep, with foliage erect, should have their stems twisted down to check top growth and assist in hastening the swelling and ripening of the bulbs. The sooner those with their tops nearly or quite brown are cleared off the moist ground the better, otherwise they may start rooting afresh, and this will impair their keeping qualities. The bulbs must not, however, be stored till they are thoroughly ripened by being laid thinly on mats, sunny walks, greenhouse stages, or shelves of comparatively empty houses. The old-fashioned plan of roping Onions and suspending them in airy sheds is still the best method. Tripoli Onions are invariably the worst keepers, and should be used first. After these those of the White Spanish type and other varieties with flat, straw-coloured bulbs should be used. This season, such late-keeping varieties as Brown Globe, The Wroxton, and James Keeping will be specially valuable.

Winter Spinach.—If from any cause the seed sown in August has failed to germinate, more should be sown at once. On land with warm subsoils these later sowings sometimes succeed the best, but, as a rule, the earliest-raised plants prove the most serviceable, and every care should therefore be taken of them. Transplanting may safely be done in showery weather, and for this reason it is advisable to thin out seedlings very lightly where they are crowded and thin finally when the plants are large enough to be dibbled out. Sprinklings of soot and frequent surface hoeings have a most beneficial effect on Spinach.

Tomatos.—Outdoor Tomatos have grown well and are fruiting heavily, very little disease being apparent. Should fine weather continue for a few weeks longer the fruits will ripen rapidly. All superfluous growths should be kept closely cut away, and where the leaves smother the trusses these should be thinned out to let the fruits have full exposure to sunlight. Too often the leaves are removed wholesale, but this is a mistake, as the loss of foliage either from disease or premature removal checks the growth of the fruits and also spoils their quality. Let the ripening for the present be natural and, if much of the fruit still remains in a comparatively green state when cold weather may reasonably be anticipated, the trusses may be cut off and the greater portion of the fruits ripened in a dry, warm house. Keep the roots well supplied with liquid stimulants and the top growth as dry as possible.

General Remarks.—This has been a fairly good season for the growth of all kinds of kitchen garden crops, and of weeds as well. Besides clearing off crops that are no longer profitable and storing others for winter, there is much work to be done in getting the land free from weeds while the sun is still strong enough to dry them quickly. After September this work becomes much more tedious and expensive. It is surprising what constant hoeing and scarifying the surface soil will do in clearing the worst cases of foul land. Late crops that have been put out recently should be encouraged to make growth while the warm weather lasts. Applications of liquid manure will assist all crops, as they require an abundance of moisture while making growth.

THE HARDY FRUIT GARDEN.

By JAS. HUDSON, Head Gardener at Gunnersbury House, Acton, W.

Selection of Trees for Planting. — The selection of fruit trees for planting is an all-important matter, and one that calls for careful attention. I advise that it be attended to as

soon as possible after this date. The trees should be selected in the nursery, for it is only by this means that specimens can be chosen to suit any given position or locality. I like to see the trees growing; it is an education to do this, and one cannot learn too much from the fruit tree expert. It is preferable to obtain trees from exposed situations, where they are exposed to the wind from almost every quarter. This tends towards a hardier constitution. My advice is not to be guided by the vigour of any kind of fruit tree so much as by its uniformity of growth and symmetry. If often happens that the district is, to some extent, strange to the person in charge. When this is the case, find out beforehand what varieties of fruit do best in that particular district and select accordingly. When visiting a fruit nursery make it a practice to inspect the trees in a quarter that has been drawn upon the previous year, where, as a matter of course, the trees stand further apart and can be viewed easily. Besides, these trees have had more exposure, and possibly, too, not so much manurial stimulants in the past season. True, such trees may cost a little more, but it will be money well spent.

Trained Fruit Trees.—In selecting trained trees, such as Peaches and Nectarines, avoid those with a central leader, as these are not so likely to form well-balanced specimens in the near future. Always watch for any symptoms of canker and reject such trees as are affected. Where there is room it is preferable to have two trees of any given variety rather than one only. If I purchase Cherries and Plums as fan shaped trees I eventually get them into the horizontal form, for on our soil Cherries do better when horizontally trained. In the case of Pears, horizontally trained trees are preferable, for fan trained examples cannot at all times be formed into well balanced specimens. For quickly filling a wall both single and double cordons (on the gridiron forms are stout) to be recommended. This is great help in furnishing a wall as quickly as possible, and the somewhat additional cost in the first instance is soon well repaid by the quicker return in crops of fruit. With respect to pyramids, the trees should be well furnished and well balanced also. Trees that have been grown at a fairly good distance apart are much to be preferred even if not quite so tall for their age.

Bush and Standard Fruit Trees. Specimens marks apply to dwarf Apple on the Paradise stock. The true secret with all these trees to get them well established at the commencement. In selecting standard trees always choose those with clean, well-developed stems. There is often a great variation in the trees, but the cleanest in the stem are the best to choose, even if somewhat dearer than others.

THE ORCHID HOUSES.

By J. COLLIER, Gardener to SIR JEREMIAH COLMAN, Bart., Gatton Park, Reigate.

Odontoglossum.—A few Odontoglossums have started well into growth, and where a representative collection of these Orchids is cultivated some of the plants require attention at the roots at intervals throughout the year. But the month of September is the best time for general repotting or replenishing the surface materials, as may be found necessary. Plants that have grown to the sides of the pots, and those that are in old compost and have become exhausted should be repotted. The best time for this operation is when the young growths are from 2 to 3 inches long, as at this stage new roots are developing from their bases. The plants should be turned out of the pots and the old materials shaken from the roots. Decayed roots should be cut away, also old, leafless pseudo bulbs, leaving two or three pseudo-bulbs behind the young growths. Small, healthy plants are best repotted annually, and this should be done without much root disturbance, while plants growing in 5 or 6 inch pots that were repotted last year and with compost in good condition should not be disturbed, but some of the materials should be carefully picked from the surface and replaced by fresh. In repotting, select a clean pot that will accommodate the plant for two seasons, and fill it to one-third its depth with clean crocks, covering these with either a small quantity of Sphagnum moss or the rougher portions of the compost. Keep the back part of the plant near to the side of the pot, and the base just level with the rim; press the soil with moderate firmness against the rhizome and between the roots. When the plant is potted the front of it should rest on the surface of the compost. A suitable rooting medium for Odontoglossums consists of equal parts of Osmunda fibre and A1 fibre, with chopped Sphagnum moss, half-decayed oak leaves, and crushed crocks added. After the plants are repotted they should be placed in the house and watered with a can having a fine rose, and shaded from bright sunshine. Keep the atmosphere humid by damping the bare spaces whenever they become dry; on bright days a light spraying overhead will be beneficial. Water the plants with extra care until the roots have grown freely into the new compost. Plants that are in a dormant condition should not be repotted until the young roots have made suitable growth.

PLANTS UNDER GLASS.

By E. HARRISS, Gardener to Lady WANTAGE, Lockinge Park, Berkshire.

Lachenalia.—The Lachenalia is a desirable plant to grow in these times of fuel shortage, as it requires absolutely cool treatment. Bulbs may be potted now in comparatively small pots filled with a rich, open compost. The plant is very suitable for growing in hanging baskets or pans. When the bulbs are potted water them and place them in a cool house or pit, using fire heat only when there is danger of severe frost.

Chrysanthemums. These plants should receive their final stopping so far as the weather permits day or two, but the buds should be ready for the first autumn shoots there be danger of frost. Plants of the large flowered kinds should be placed under glass as soon as the buds show colour, as rains or heavy dews will cause the petals to damp. Late flowering varieties will remain out of doors for several weeks later than those of the main batch, but they should be placed in a position where covering at short notice may easily be placed over them when frost is imminent.

Begonia Gloire de Lorraine.—Let this Begonia have plenty of water and stimulants, the latter on two or three occasions weekly. The young shoots are growing freely and need constant attention in tying to keep the plants shapely. If less fire heat than usual is employed let there be a corresponding reduction of moisture in the atmosphere. If the plants are not required to flower early pick off the blooms for the present.

Climbing Roses. The final thinning of the shoots of all climbing Roses should be done now in order that those left for flowering may become thoroughly matured before the winter. The roots should still be supplied with an abundance of water and stimulants; neglect in this matter is often the cause of an attack of mildew. Should this disease appear on the foliage dust the plants with flowers of sulphur.

FRUITS UNDER GLASS

By W. J. GEISE, Gardener to Mrs. DEMESSIE, Keele Hall, Newcastle, Staffordshire.

Melons. Late Melon plants in houses or pits are swelling their fruits, and require a little warmth in the bottom pipes to maintain the requisite temperature. Every advantage should be taken of sunheat, by closing the house early, but the nights are very chilly, and it is therefore necessary to supplement this with a little fire heat, as good Melons cannot be obtained if the temperature is allowed to fall much below 70°. Syringing the foliage of Melons (as I have before remarked) is often carried to excess, and, provided the foliage is clean, the practice should now be discontinued. The paths, walls, and other bare spaces may be damped on fine mornings, and again when the house is closed, but the damping must be strictly in accordance with the weather. Remove all superfluous shoots that would obstruct the light. Top-dress the beds with a thin layer of fresh loam and a little bone-meal or fine, old lime rubble. As large Melons are not desirable at this period manure should not be used; rather aim at producing medium-sized, well-flavoured fruits averaging 4 lbs. in weight.

Melons in Frames.—Melons in frames should be just approaching the ripening stage. If the frames are furnished with hot-water pipes there will be no difficulty in obtaining fruits of a rich flavour by high temperature and dry atmosphere, essential to obtain finely finished specimens. Very little moisture is required, but just sufficient is needed on bright mornings to keep the foliage from flagging. Water should be withheld at the roots and the soil gradually allowed to become dry when the fruits are ripening; it is a good plan to arrange the fruits above the foliage by placing them on inverted flower pots, as the quality and flavour is considerably improved by full exposure to the sun. Keep the glass, both inside and out, perfectly clean.

Tomatos.—Winter-fruiting Tomatos should be shifted at once into large pots. It is not advisable to fill the receptacles with soil, but it should be made firm; leave ample room in the pot for adding top dressings on several occasions. Keep the house closed for a few days until the roots are established in the fresh compost, then admit air freely, to encourage the development of short jointed, sturdy growths.

THE FLOWER GARDEN.

By E. F. HOUGHTON, Gardener to the Earl of RADNOR, Coleshill, Twyngham, East Isbury.

Border Pinks.—Varieties of Border Pinks, as well as some spreading species, are at this time of the year easily increased by division. If the atmosphere has been most numberless roots will have formed along the stems, but even where no roots have formed the pipings will root with certainty. Notch lines in the ground for their reception, and it will be productive of nice firm growth if some old potting material is placed over the stems before filling in the soil. They may be watered, but at this season it is not essential, especially if the soil is pressed very firmly. There is a very pretty form of Cyclops which I have had off and on for many years, which also should be propagated now, but this I increase by means of cuttings inserted in 5 inch or 6 inch pots which are stood in the Carnation house till spring, when they are ready to plant out.

Carnations. If Carnations were layered early the young plants are now ready to transplant into beds where they are to flower. The benefit of early planting, apart from strengthening the plants, is that frost has no evil effect, as is so evident in the case of those planted late, in lifting them partially out of the ground. In 1915, when time to do things right seemed impossible, I planted Carnations in undug and otherwise unprepared ground, and nothing could have done better than they did. Not only were usual border varieties included, but also show sorts and Picotees, generally restricted to pot culture. The lesson from that is that Carnations must have a very firm soil for rooting in, and consequently, after digging, the ground should be made firm by foot pressure before planting, and very porous soil be made firm after planting. It is to be remarked that the Carnation is semi fruticose, and therefore must not be planted deep, with the further caution that strong plants may require support until established. Instead of inserting a short stick parallel to the plant for this purpose I prefer to put it in askant and secure the plant to it with a single tie where it touches the stem. A percentage of layers should be potted in order to have spare plants to fill blanks in spring, and now is also a good time to pot up the whole stock where spring planting is the custom. During much rain the plants should be placed in frames.

EDITORIAL NOTICE.

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.*

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

APPOINTMENTS FOR THE ENSUING WEEK.

TUESDAY, SEPTEMBER 10—
Roy. Hort. Soc. Comms. meet and National Dahlia Soc. (combined show).
WEDNESDAY, SEPTEMBER 11—
Acton Allotment Show.
FRIDAY, SEPTEMBER 13—
Southend Food Exhibition (2 days)
TUESDAY, SEPTEMBER 24—
Roy. Hort. Soc. Comms. meet.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 58.4°.

ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, *Thursday*, September 5, 10 a.m., Bar. 29.8, temp. 61. Weather—Close and damp.

SALES FOR THE ENSUING WEEK.

TUESDAY—
Sale of Winter Blooming Heaths and Greenhouse Plants at Burnt Ash Road Nurseries, Lee, S.E., by Protheroe & Morris, at 11 o'clock.
WEDNESDAY—
Sale of Bulbs, Palm Seeds, &c., at 67 to 68, Cheapside, by Protheroe & Morris, at 1 o'clock.

Wood.

We are so familiar with the uses to which wood is put that the amazing and varied properties which timber possesses rarely if ever excite our wonder. Yet those properties of strength, elasticity, and durability confer on timber, as is pointed out by Prof. Groom,* a superiority over all other structural material.

Suitably used and treated, wood is more durable than iron, and may be subjected to processes which enable it to withstand temperatures at which iron becomes a molten fluid. By its disintegration the fibre for paper and cordage is obtained, and by distillation or partial decomposition of wood all manner of precious chemicals—alcohols of various kinds, acetone (so necessary for munition work), formalin (one of the chief antiseptics), turpentine, as well as dyes, scents, and drugs—are produced.

In spite of the ever-extending use of metals, wood holds it own, and every year the consumption of timber per head of population steadily rises

The insatiable demand of this country for wood is revealed by the import returns. As Prof. Groom points out, the value of timber imported in 1913 was: Soft wood, 32 million pounds sterling, and hard wood, 10 million; and to this must be added the not inconsiderable value of the home-grown timber which was felled.

Since the supplies of soft wood and their accessibility are decreasing, it is evident that the price of soft wood of large dimensions—Douglas Fir, Pitch Pine, and Scots Pine—is bound to increase. It is, therefore, important, as Prof. Groom insists, that increased economy and production be practised, and it will also be necessary to substitute, as time goes on, available hard woods for soft wood. In spite of the enormous consumption of timber in this country we cannot be charged with extravagance, for our annual consumption per head of population is less than that of any other great Power except Italy. Whereas we only use 14 cubic feet per head of population, France uses 24.6, Germany 36.6, Canada 192, and the United States 260. Prof. Groom insists that afforestation must be practised in order to provide for home needs, and points out that our climate is well suited to the growth of Coniferous—that is, soft-wooded timbers. The timber produced here is good, and can be used for many purposes. Scots Pine grown even in the South of England is good enough for wood paving, and the slow-growing trees of Scotland produce timber good enough for use in the construction of the vital parts of aeroplanes. The difference between the value of timber from trees of a given species—Scots Pine, for example—is due not to differences in quality of woody substance, but to the relative amounts of spring and autumn wood formed each year. Spring wood has relatively thin walls and large spaces, autumn wood thicker walls and smaller spaces. Since climate determines the relative amounts of spring and autumn wood formed in each annual ring, it is possible to predict with considerable accuracy the properties and value of the timber grown under different climatic conditions. In this way Germany, with its well-regulated forests and research laboratories, was able to ascertain at once from which forests timber suitable for use in aeroplane construction was to be obtained.

Prof. Groom gives an interesting example of the economic loss which follows from the present confusion in nomenclature of certain hard woods, such as mahogany. Wood from various trees is sold in this country as West African mahogany. Many of these spurious mahoganies come from the German Cameroons. Germany sent us false mahogany which enjoyed the prestige of the name, and so realised a better price than if it had been sold under its proper name. The importance of proper seasoning of timber is due to the fact that many of the desirable qualities of timber vary in inverse proportions to the amount of water which it contains. On the other hand, the presence of considerable quantities of water in timber permits of its being manipulated, as, for example, by compression to form railroad keys or bent for use in furniture-making. Seasoning has, of course, another effect of great value, that of rendering wood less apt to decay. The loss from decay in unseasoned wood such as that generally used for pitprops is prodigious. For instance, it has been estimated that if the pitwood in the United States were treated with antiseptics before use there would be a saving of 50 per cent., or of 50 million cubic feet per annum. The wastage of pitwood may in some cases be so great that props require to be replaced in from 4 to 12 weeks, whereas creosoted props in the same mine may last 8 years. We cannot here do more than give a brief summary of Prof. Groom's valuable paper, but we would recommend all who are interested in the use of wood and the development of the timber resources of the Empire to procure a copy and peruse it with attention.

* "Timber Industry," by Percy Groom, D.Sc., *Journ. of Roy. Soc. of Arts*, July 5, 1918.

National Dahlia Society.—The annual exhibition of the National Dahlia Society will be held in the Drill Hall, Buckingham Gate, Westminster, on Tuesday, September 10, in conjunction with the Royal Horticultural Society's fortnightly meeting.

Garden Judges. — Some comments upon the action of a competitor in interfering with the judges at the recent competition for prizes for the best gardens in the Burgh of Kirkcudbright were made in the judges' report submitted to a recent meeting of the Town Council. It was alleged that one of the competitors had interfered by offering the judges some uncalled for advice regarding their duties. The Council agreed to intimate that exhibitors interfering with the judges in their duties would be disqualified.

Prices for Vegetable Marrows.—The Food Controller has made an Order fixing the following maximum prices for Vegetable Marrows, which are largely used in the manufacture of jam:—Grower's price on sales to a licensed jam manufacturer (f.o.r. at grower's station), £6 per ton; grower's price to retailers (delivered ex market or to retailer's premises), £6 10s. per ton; grower's price on any other sale except retail sale (f.o.r. grower's station), £5 10s. per ton; wholesale dealer's price (delivered ex market or to the buyer's premises), £6 10s. per ton. Retail Sales: One penny per lb. or any part of a lb., with a maximum of 7d. for any single Marrow. No charge for delivery is permitted. In a season when the fruit crop is poor Marrows are also short of the demand. It has, therefore, been arranged that jam manufacturers shall be at liberty to buy for jam making, in priority to any other purpose, any Vegetable Marrows in the hands of growers or wholesale dealers on tendering the maximum price. If the Marrows are in the market this price will be £6 10s. The Order, which came into operation on August 28, cancels contracts above the maximum price: it does not apply to cooked, preserved, or Custard Marrows, nor to Marrows grown in Ireland.

Flowers in Season.—Mr A. DAWKINS, King's Road, Chelsea, sends flowering shoots of his new Calceolaria Buttercup, which gained the R.H.S. Award of Merit on May 28, 1918, and was illustrated in fig. 97, in our issue for June 1, 1918. The inflorescences are exceedingly floriferous, the blossoms being rich yellow. Mr. DAWKINS states that "the branches were cut from one of the plants exhibited at the Drill Hall on May 28 last. After flowering in the greenhouse the plant was cut back and planted in a border: it commenced to flower early in August, and is still in full bloom."

Jam.—An Order amending the Jam (Prices) No. 2 Order, 1918, came into operation on Monday last. Prices show an advance of 1½d. to 3d. per lb. on those which have hitherto been in force. New varieties of jam have been added to the Schedule of the Amended Order. Rhubarb jam and Rhubarb mixed with other fruit can still be bought for 11d. a lb., and Gooseberry and Apple mixed is the same price. Jam mixtures not specifically scheduled are 10½d., which is a halfpenny up; and other prices range from 11½d. to 1s. 2d., Cherry (a penny up) and Strawberry being bracketed at the latter figure. Marmalade is 1s., as before: Raspberry, Black Currant, and Loganberry, at 1s. 1½d., are un-

changed; Red Currant and Plum are each 1s. 0½d.; Apricot and Pineapple are increased ½d., now making 1s. 1½d.; Blackberry, Peach, and Greengage have risen 1d., Peach being 1s. 1½d., and Blackberry and Greengage 1s. 0½d; while Damson and Plum, 2d. dearer, are on the 1s. 0½d. level. Mixtures with Melon are listed at 1s. 1½d.

Destruction of Rats.—The Ministry of Food has issued an Order giving power to local authorities to take such measures as may appear to them to be necessary to secure the destruction of rats, and making it compulsory for all persons concerned to comply with the regulations issued under the Order. The intention of the Food Controller, we understand, is to permit local authorities to decide for themselves what steps are most likely to be successful in their own districts.

Food for Bees in Winter.—Bee-keepers are recommended by the Food Production Department to inspect their stocks immediately. Those which are weak and have less than five seams of bees should be united to form strong colonies of not fewer than eight seams, and all those which are short of food should have a quantity of syrup fed to them for immediate storage in the combs. This syrup can be made by dissolving each one pound cake of candy in 10 ozs. of water by heating over the fire. The manufacturers of this candy, Messrs. Jas. Passmore, Ltd., Blackfriars Road, London, S.E., are receiving large numbers of orders from bee-keepers, who are apparently ordering sufficient supplies not only for autumn feeding, but to last them right on the winter and spring. The supply of candy so far available may prove insufficient for both purposes, and as a result many bee-keepers, especially those who have nucleus stocks, may be unable to obtain any for immediate use. This candy has been manufactured solely to supply present demands, and, under these circumstances, bee-keepers should obtain just now only those supplies necessary for immediate syrup-feeding. The candy required for winter and spring feeding should be ordered at a later date.

Food for Pigs.—The War Emergency Committee of the Royal Agricultural Society, having called the attention of the Ministry of Food to the difficulty of obtaining food for pigs, has been informed that priority certificates for millers' offals are now issued by live stock commissioners in respect of pigs. Allocations of Palm kernel cake are also being made to county feeding-stuffs committees for pig feeding, and persons desirous of obtaining either cake or millers' offals should apply to the live stock commissioners of their area for the certificate.

Caterpillar Plagues and Their Prevention. In view of the immense amount of damage done to fruit and vegetable crops by caterpillars the Food Production Department directs attention to the fact that if all fruit growers would combine in a great preventive campaign against fruit tree pests they would be insured against a repetition of this year's attack, which caused much damage in gardens and orchards. It cannot be too often stated that the greater part of the ills that afflict garden, market garden, and orchard crops can be obviated by preventive measures taken in due season. To prevent a plague of caterpillars next spring, and summer standard and bush standard fruit trees should be grease-banded now and other precautions taken during the winter and spring. As soon as possible, and not later than the end of September, the grease-bands should be applied. Early in October the wingless females of the Winter Moth family begin to crawl up the trunks of the trees and to lay their eggs on spurs and twigs. In the spring these eggs will hatch into small caterpillars, and these caterpillars will soon strip the trees of their leaves, to the great detriment of the immediate fruit crop and the eventual health of the tree. The best method of preventing these attacks is to tie bands of stout, grease-proof paper smeared with a sticky preparation sold for the purpose around the trunks of the trees. The moths in attempting to climb the trunks become entangled in the grease and eventually die. Fresh grease should be smeared over the bands every four or five weeks, or whenever the outside surface has become dry from exposure.

Harvesting Sunflower Seed.—Sunflower seed will ripen on the open in a fine autumn, but care must be taken to protect it from birds and to prevent the ripe seed from falling on the ground. A small piece of muslin should be tied over each head, when the planting is small. When the head shrivels and the seeds are ripe, the plants should be cut at the ground level, and stood with their heads uppermost like sheaves of corn. When the heads are thoroughly dry the seed should be rubbed out, the remaining stock fed to cattle or used for litter, and the seed stored in bags in a dry place. Before winter sets in, the seed should be carefully picked over, and all that is not perfectly sound rejected. It is then ready for sowing in the spring. If the plants are cut at the ground level as soon as the seed is ripe and tied in an inverted bundle, the seed will keep until the heads shrivel, the bundle is untied and placed in single layers on the floor of a shed open in the evening, leaving the doors and windows open. When the fire is made up in the morning, the heads should be removed and replaced in the evening.

War Item. The Canonbie Horticultural Society held a highly successful Floral Fete at the end of August, and realised a sum of about £150 for the Scottish Red Cross Funds.

REMARKS ON THE CONDITION OF THE FRUIT CROPS.

(See Tables in *Gardeners' Chronicle* for August 3, p. 42.)

(*Continued from p. 92.*)

3. ENGLAND, E.

OXFORDSHIRE.—The fruit crops this season are disappointing. Apple trees developed plenty of bloom, but the fruits failed to set. This is largely owing to the scarcity of bees in this district, most of the stocks have died out. There are no Pears. Plum trees flowered freely, but cold winds injured the bloom, except in the case of trees sheltered by a south wall, and these are carrying good crops. Black and Red Currants

FIG. 96.—CAULIFLOWER VEGETABLE MARROW VARIETY (see p. 104).

are good and clean. There was a splendid crop of Raspberries (Superlative and of Gooseberries. Strawberries were a good crop, but owing to the drought the season did not last long. Our soil is a fine loam on lime stone. *William J. Sheat, Mid-dleton Park, Bicester.*

The fruit crops this season are very much under the average. Apples and Plums, although the trees bloomed profusely, failed to set. There was a sprinkling of Apples on young trees, but Plums are a complete failure. The latter rotted apples also to Pears; for some reason the trees failed to bloom. Peaches provide much the best fruit crop in these gardens. Small fruits, on the whole, gave average crops, but suffered from the prolonged drought. Early and mid-season Strawberries bore good crops,

but late varieties suffered from drought. I never remember a worse season for insect pests, particularly caterpillars and aphis. Unfortunately, shortage of labour has prevented measures being taken for their destruction. The soil is light, shallow loam, on lime-stone brash. *Ben. Campbell, Combury Park Gardens, Chadlbury.*

—— Apple trees are yielding an average crop; they are fairly free from blight. We have no Pears. Plums and Cherries can only be described as fair, but Gooseberries, Red Currants, and Strawberries were plentiful and good. The soil is a light loam on gravel and chalk. *J. A. Hall, Shaplake Court Gardens, Henley-on-Thame.*

—— This is a bad fruit year. Plum trees, Cherries, and bush fruits were in full bloom in April when snowstorms and cold nights did much damage. Our Apple trees bore very little bloom this year; the temperature at flowering time was on one day 38° in the shade, so that what bloom existed had little chance of setting. *A. J. Long, Wyfold Court Gardens, near Reading.*

—— The fruit crops here are the worst I have ever known. Scarcely any blossom developed on Pear trees. Apple blossom was also sparse and weak, and even the most promising trees set very few fruits. On the contrary, we had a wealth of Plum blossom, but, unfortunately, frost and snow prevailed at the setting stage. Cherries flowered abundantly, but notwithstanding the absence of frost during their flowering period they failed to set fruit, with the exception of the Morello variety, of which we had a fair crop. Excepting Strawberries, Raspberries, Loganberries and Wineberries, soft fruits have been disappointing. Fortunately, we have abundant crops of stone fruits under glass. The soil here is a heavy marl, the subsoil chalk, being near the surface. *Frank J. Clark, Aston Rowant Gardens, Aston Rowant.*

—— Apple trees did not bloom well, probably on account of the heavy crops they carried last year. Wall trees blossomed freely, but the cold, frosty nights of April injured flowers of Pears, Plums, and Cherries. Apricots set fairly well, but although under glass coping and canvas, many of the young fruits were destroyed by frost. *C. E. Munday, Nuneham Park Gardens, near Oxford.*

5. SOUTHERN COUNTIES.

BERKSHIRE.—With the exception of bush fruits and Strawberries, the fruit crops are comparative failures, owing chiefly to the bad weather prevailing at the time of flowering. Apples and Pears, with the exception of one or two kinds, are very scarce, and we have practically no Plums, although the trees flowered well. *W. Miles, Caversham Park Gardens, Reading.*

—— The fruit crops in this neighbourhood are much below the average, especially as regards Apples and Pears; indeed, it is the worst season I have experienced in forty years. Some of the varieties showed plenty of flower, but it was late in developing. The only Pear trees carrying a crop are of the old Williams' Bon Chrétien variety. Plums are also scarce. Peaches and Nectarines are bearing good crops, while Apricots are the best for some years. Strawberries suffered much from the drought, and Raspberries were very disappointing, many of the canes dying back in the late spring, although they had previously looked healthy. Loganberries, Mulberries and bush fruits have borne good crops, but Black Currants were smaller than usual. *J. Howard, Basham Palace Gardens, Newbury.*

—— The fruit crops here, with the exception of small fruits and Peaches, are much under average. Pears are a failure. The trees showed the usual quantity of flowers in spring, but the blossoms were weak, and they dried up before pollination was effected. The heavy crop of 1917 must have had a weakening effect on the trees, and during the flowering period the weather was too dry. The soil here is of a light nature over a gravel subsoil. *J. Minty, Oakley Court Gardens, Windsor.*

—— Apples and Pears are scarce. Plums on the walls are bearing light crops. All bush fruits were good. Strawberries were small on account of the absence of rain. Peaches, Plums, and Apricots were in bloom in March, when we experienced frost and snow. Apples have fallen for want of rain; a few trees that are bearing are Beauty of Bath, Worcester Pear main, Lane's Prince Albert, Royal Jubilee, Bismarck, Mere de Menage, Ribston Pippin, and King of the Pippins. *A. B. Wadds, Engle field Gardens, Reading.*

DORSETSHIRE.—Pears and Plums this year are the greatest failures in my recollection. I have counted upwards of 50 trained wall Pear trees without a solitary fruit, and pyramid trees are quite as fruitless. Beurre d'Anjou on a south wall is the only variety bearing anything approaching a crop. The same remark applies to bush Apple trees, but in the orchard we have about one third of a crop. Cherries, both Sweet and Morello, have borne average crops, and are good in quality, and the same applies to Peaches and Nectarines but Apricots are a very light crop. Except Black Currants, which yielded badly, small fruits have been plentiful and good. Strawberries suffered from the drought in June, and were much under the average. Nuts of all kinds are a light crop. The soil is of a retentive nature, on both rock and clay subsoil. *T. Turton, Castle Gardens, Sherborne.*

HOME CORRESPONDENCE.

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

Double Cropping in the Lea Valley.—Your interesting article on double cropping in the Lea Valley, on p. 75, states that the report does not give the date at which the Potatoes were planted, nor that at which they were lifted. If you refer to the report you will find that it distinctly states that "the sets were planted, after sprouting, on January 20, and the crop was lifted on May 7. *A. D. Lister, Director, Experimental Station, Cheshunt.*

Potato Majestic. When Mr. Cuthbertson lectured on Potatoes at the Mansion House early this year he made special mention of a Potato named Majestic. As Mr. Cuthbertson's knowledge of Potatos is extensive, I at once obtained seed of this variety, and now regret I could not procure more, but that was not possible, as only a limited quantity was on the market. This variety is in every way all that was claimed for it. The growth is of medium height, the crop heavy, and the tubers clean, pebble shaped, and white, with very shallow eyes. When cooked the Potatos are floury, white, and of excellent flavour. *E. Molyneux, Swanmore Farm, Bishop's Waltham.*

Cultivation of Drug Plants.—In one of the London daily newspapers recently there was a short paragraph on the establishment of a company called the British Drug Farms and Distilleries, Ltd., for the growth of medicinal herbs in Cornwall, and establishing a college of horticulture in connection with the drug farm. It appears, therefore, that a serious effort is to be made to create a British drug industry and to maintain it. If this is the case in reality, it should in the future assist the nation to become independent of foreign supplies of raw material for one of its most vital needs, in addition to developing further our natural agricultural assets. It is indeed surprising that such a step has not been taken until now. *C. W. Howard.*

"Rogues" among Potatos (see p. 83).—Mr. Jackson calls attention to what I said about rogues in Potatos in one of my recent lectures. He thinks the rogues should be more mercifully treated than I advised because "some of them are entirely new sorts produced from the tuber itself . . . The Potato, like many other plants, has the power to produce new sorts vegetatively apart from seed." Perhaps Mr. Jackson will tell us of some examples of this. I have been looking for them for twenty-five years, and have not found any of importance. Colour variation I have found, e.g., I have found King Edward give tubers red in colour all over, which maintained that character when propagated in the usual way. It will be remembered that Northern Star has a touch of reddish-purple colour in the eye. I found a tuber once at a root of Northern Star with the eye-colour distributed over the whole tuber, that also remained constant when propagated. Many years ago a writer in a contemporary—a gentleman who now occupies a high position in the horticultural world—said that the way raisers got new varieties was by marking outstanding plants in their crops and working up stock from them! If Mr. Jackson or anyone else can give us indisputable evidence of such mutations as he writes about it will be welcome information to both raisers and scientific investigators. *W. Cuthbertson.*

Fruit Crops in Hertfordshire.—It may interest you to know that the Apple crop in Hertfordshire is not a failure. Most trees in these gardens are laden with fruit, and especially those of the varieties Lane's Prince Albert, Queen, Bramley Seedling, Newton Wonder, Stirling Castle, and Royal Jubilee. Dessert varieties are all fruiting heavily, with the exception of Cox's Orange Pippin and The Houblon. The crop of Pears on wall trees is below the average owing to a scarcity of bloom, but trees that bloomed have set fruits freely. Gage Plums are an excellent crop, and especially Early Transparent Gage and Oullin's Golden Gage. Plums Early Prolific and Jefferson are good, but other varieties are failures. Apricots, Morello Cherries and Peaches are average crops. Bush fruits were quite up to the average, with the exception of Red Currants. Nuts were never better. *T. Pateman, Node Gardens, Welwyn, Hertfordshire.*

SOCIETIES.

VEGETABLE SHOW AT DOVER.

AUGUST 23.—A successful show of allotment produce was held on the Sports Ground, Dover, on the 28th ult., in connection with a military display. The produce shown was of high quality, especially in the classes for Potatos, Onions, Carrots and Beets. The soil at the various camps is a flinty loam of not more than 8 inches in depth, upon pure chalk, and it was surprising to find such excellent produce as was exhibited.

Mushrooms are grown in quantity in the galleries of the old fortifications and also in the dungeons of the Castle, while on the chalky slopes overlooking Dover Harbour plants of Tomato Holmes' Supreme are carrying splendid crops. Sea Kale is extensively grown in the open and blanched in the subterranean chambers which abound in the old fortifications. Marrows also appear to luxuriate on the hot, arid slopes.

The cultivation at the various centres is under the direction of practical gardeners drawn from the ranks, and who in the past have superintended private establishments where considerable staffs of under-gardeners are kept.

The whole of the produce was judged by two local horticulturists and a representative of the Horticultural Division of the Food Production Department. The arrangements of the exhibition were carried out by 2nd Lieut. Grant White in a most business-like manner.

In 1917, within Dover Garrison, the acreage under cultivation was 35 acres, and in 1918 has increased to 60 acres.

The following was the total yield for 1917: Potatos, 150 tons; Brassica (Cabbage, Turnips, etc.), 420 tons; Vegetable Marrows, 6,300; Beans, 2 tons; Lettuce, 6,000 heads. The crops of 1918 promise to give even better results than 1917, and up to the present the total yield is: Potatos, 193 tons; Brassica (estimated), 600 tons; Vegetable Marrows 9,000; Beans, 4 tons; Lettuce, 10,000 heads. Roughly, 1,400 tons of vegetables have been grown in the garrison during 1917 and 1918, thereby releasing 156 railway wagons, or 7 trainloads, to carry foodstuffs for the civil population.

CHESTER PAXTON.

CONSIDERABLE impetus has been given to the allotment movement locally by the Chester Paxton Society's offer of prizes and cultural certificates for the heaviest cropped and best kept allotments. Considerably over a hundred allotment holders entered for these awards this year, with the result that more than 60 prizes and certificates have been awarded by the judges. Last year there were some 1,200 allotment gardens in the city and suburbs, and the number during the present year has been increased to nearly 1,550.

CROPS AND STOCK ON THE HOME FARM.

CLEARING UP THE HARVEST.

ON our 350 acres of arable land Wheat cutting commenced on July 31, and to-day (August 31) we are clearing up the Barley raking, which usually covers the latest operations. Although much of the Corn was laid and twisted, with patience and by using the binders one way in case of bad lands, the cutting was carried out quite satisfactorily, and the bulk of the harvest promises well. Where a Wheat rick is erected I like to see that a quantity of straw at once, as Wheat and rye comes it better if well dry in the rick, even when, as in our case, it is sold off the land in October. Barley, too, is not covered the day after the rick is built, as rain affects Barley straw more than that of any other cereal, especially when cut moist, and even when in shelves the straw does not be so noticeably as in the case of Oats or Wheat, therefore my advice is, that a Barley rick promptly. Oats are the worst of all cereals to manage well. If they are strongly set on the straw has extra large green nodes which contain much sap and take a long time to mature thoroughly. This is why Oats require a lot of field room. If Oats are carted too quickly, especially if grass, Thistles or weeds are in the sheaves, extra exposure is needed or the whole will ferment, ending in "musty." Corn which is noxious for seed and not very valuable for cattle. The straw too is deprecated for use as fodder. Some of the strong growing hybrid Oats are safer to these failings, but Black Tartarian is not nearly so liable to them as others. If there is any doubt about the condition of the rick watch the apex early in the morning, and if steam is coming through, and there is the slightest suspicion of anything wrong, delay the thatching. Use the bar 12 feet long thrust into the middle of the rick is useful for testing its condition; if it is quite cold, or nearly so, at the end of twenty-four hours, there is then no danger of heating.

After threshing, the straw ricks should be promptly thatched, as the straw is thereby kept in good condition. I have heard persons say, "Rake down the roof, it will be all right." This is not so, as rain seems to have the power of collecting in certain parts of the "roof" and then thoroughly wets the straw in that area and quickly discolours it. The saving short straw from the threshing machine, as well as the "hulls" (chaff covering of the grain) should be collected and kept dry.

Where threshed cereals of any kind are to be kept any length of time the grain should not remain in the sacks too long especially if on a cold or damp floor. Wheat quickly becomes "cold," and is then not in a good condition for grinding. All grain should be spread on a wood floor and turned occasionally, well ventilating the building by day when the weather is not foggy or wet. It is strange how quickly threshed Wheat attracts moisture. Growers of seed Corn should remember that before sale the grain must be tested for purity and germination at some establishment authorised for this purpose; no Corn may now be sold without a certificate of purity and germination. I fear too many farmers sow seed without cleansing it from weed seeds and spurious grains; all tested seed will be sold at its correct value, which is a step in the right direction.

EARLY SOWING OF WHEAT.

It is important that wherever harvest operations will allow, and the district does not suffer from drought in early autumn, Wheat should be sown early. Experience has shown that the advantages that accrue from early sowing in a normal season are often considerable. Light crops of Wheat due to late sowing are more frequent in many parts of the country than is realised. A smaller quantity of seed should be used when sowing early: 1½ bushel per acre sown in September will give as good a crop as 2 bushels sown in October, or 2½ bushels in November. There are similar advantages from early sowing in the case of Rye.

CLOVERS.

The seed sown with the Corn in the spring has a very irregular appearance. Some parts of a field may have a regular growth, while on others adjacent to the same field there are bare patches. No doubt the moist weather at the end of March and in the first half of April started the young plants into growth, and the subsequent unfavourable weather "matted" the seed, thus killing the growth. Italian Rye Grass or Trifolium may be sown this autumn, at the rate of 1 bushel of the former per acre, or 20 lbs. of the latter, will make good plants and provide a more regular crop either for sheep or cattle. *H. Molyneux Simmonds (Farm Bailiff to H.M. the King).*

NEW INVENTION.

FRUIT FARM PLOUGH.

MESSRS. J. B. CROFT AND W. P. SEABROOK have invented a handy implement that is especially designed for use in fruit plantations. It has an adjustable mould and movable handles, and it is drawn from a stake on the boom instead of from the horse, consequently when horse and plough are turned to the right hand to the next row the horse is not required to walk on the ploughed land, but passes to the right of the stake.

TRADE NOTES.

RECONSTRUCTION OF THE HORTICULTURAL TRADES ASSOCIATION.

UNDER the presidency of Mr. Alfred Watkins about one hundred and fifty members of the horticultural trade met in the Cambridge Room, Great Eastern Hotel, on Tuesday, September 3, to consider the subject of reconstructing the Horticultural Trades Association. The meeting was announced to commence at 2.30 p.m., but as that hour the president's address on the business of the annual meeting held in the morning was not finished, consequently the latter meeting could not be called to order until a quarter to 4. A common Holders' Association was discussed, with the result that the meeting eventually agreed to recommend to the Food Production Department a scheme whereby the allotment business should be worked through the retail seedsmen, who would be prepared to allow a rebate on quantities.

At the close of this discussion the president brought forward the matter of all absorbing interest to the reconstruction of the constitution of the H.T.A., and he suggested that the principles as set forth in the circulars sent out to the trade should be adopted, and that the details and rules be left for the consideration of a special committee. Mr. R. Wallace then outlined the scheme which commences with District or Local committees, who are to appoint representatives to County or Group Committees. The latter will elect representatives to the Central Committee. The Central Committee will decide into trade groups for the consideration and settlement of their own special affairs. The Central Committee will account the Executive Committee, which, while having no power to veto the findings of the Central Committee, will deal with all financial matters and see that the findings of the Central Committee are carried out. The Executive Committee will also appoint the secretary, rent offices, and appoint similar details.

Mr. Wallace is a most able speaker and he roused considerable enthusiasm. He was followed by Mr. Evans, of West Bromwich, who has been the moving spirit in connection with the reconstruction scheme. Mr. Evans made a great point of the need of co-operation to make the proposed new conditions a success, and he said that it would not suffice for a member to pay his subscription and then lose all interest in the work of the Association until he was in need of help. Financial support was decidedly necessary, but the personal interest of every member was equally necessary. Both Mr. Wallace and other speakers spoke very highly of the work accomplished during the past twenty years by the secretary, Mr. E. Pearson, the hon. secretary and other officials of the Association.

Mr. C. P. Pearson, who was very heartily and [illegible] received when he rose to speak, [illegible] approval of the principle of the [illegible] but it was rather cumbersome [illegible] and energy might be wasted [illegible] matters filtered through from [illegible] committees to the Central and Executive [illegible]. He suggested dropping the [illegible] Association started [illegible] was now 670; there [illegible] 2,000. The time had come [illegible] and he could not give the [illegible] to hoped the new scheme would be successful, so that the efforts of the past year [illegible].

When the president put the resolution to the meeting the principle of the scheme was carried without dissent. Mr. E. J. Deal considered £1,000 necessary for propaganda work, and asked for promises of donations. Eleven members promised £10 each, 15 promised £2, and five promised 2 guineas each, which, with the chairman's promise of £21, made a total of £216 10s. It was a pity Mr. Deal did not ask for donations to a guarantee fund, as he had raised the enthusiasm of the members. It is obvious that if, as Mr. Wallace suggested, a capable secretary was needed at a salary of £500 a year, a considerable guarantee fund will have to be raised to carry on until large numbers of members are enrolled. With London offices, clerical staff, travelling expenses, expenses of meetings, stationery and printing, a guarantee fund of from £1,000 to £1,500 appears to be necessary, because in the year just ended the H.T.A. subscriptions only came to just under £400, and, necessarily, some time will elapse ere subscriptions will balance the proposed expenditure.

The meeting left the consideration of details, preparation of rules, and selection of a secretary, subject to approval by the Executive Committee, to a committee composed of Messrs. E. Jackman, E. J. Deal, E. A. Bunyard, Finnegan, Cuthbertson, C. Page, G. W. Leak, Evans, R. Wallace, J. Cheal, Baker, E. Horton, Staymaker, Weeks, J. Harrison, junr., C. P. Pearson, A. Watkins and H. Morgan Veitch. Meanwhile the present officers and Council will conduct the business of the Association until the new scheme is brought into being.

A vote of thanks to Mr. Alfred Watkins closed the proceedings.

SEED BEANS AND PEAS.

By the Farm Peas and Pulse Requisition Amendment Order Beans and Peas imported for seed are exempted from the Requisitioning Order of 1917. Certain particulars are required to be furnished to the Food Controller, and the Beans and Peas must be passed by him as suitable for seed purposes.

TESTING OF SEEDS ORDER, 1918."

Although, under the "Grain Prices Order, 1918," which came into force on the 2nd inst., the prices of Wheat, Rye, Oats and Barley are fixed, there is an express provision to the effect that the Order is not to apply to any Grain which is suitable for seed, and which is also sold specifically for seed, in compliance with the provisions of the "Testing of Seeds Order, 1918." No grain so sold is to be used for any other purpose, and the buyer of any grain so sold (except when he is a person buying the grain for use as seed on his own establishment) must hand to the seller at the time of sale a declaration signed by him to the effect that he will resell the grain specifically as and for the purpose of seed.

The Order also prohibits the sale of grain otherwise than by weight, as well as the forcing or bleaching of grain.

Answers to Correspondents

AURICULAS: *C. F. P.* September is generally a good time in which to divide garden Auriculas, but if your northern garden is in a cold situation it would be well to do this work a fortnight or so earlier on future occasions. It is usual to divide pot-grown plants at about the end of May or during June, in order to allow the maximum time for them to become re-established before the next flowering season. In your light soil it would be well to add good turfy loam and to give a light dressing of slaked lime to counteract the heavy dressing of stable manure. Plant firmly and keep the crowns of the plants high when planting to prevent damping-off during the winter. After the planting is done keep the plants well supplied with water until rain falls

BOWLING-GREEN IN AN UNSATISFACTORY CONDITION: *W. A. J.* If the sample of turf submitted is typical of the bare patches on your green then there is a marked absence of lime in the upper portion of the soil. This fact would readily account for the grass dying off in the manner you describe. We would advise you to have the affected parts immediately forked over and dressed with builder's ground lime at the rate of 8 ozs. to the square yard and the remainder of the green treated with unslacked lime, using about 4 ozs. to the square yard now and a like dressing applied again in February. It would be futile to sow seeds until the spring, by which time the caustic effects of the lime will have passed off. By sowing thickly in early spring and by giving special attention to the green it may be possible to permit of playing on it by June. While this method will deprive the public of about a month's play, sowing is preferable, in these days of scarcity of labour, to turfing

CARNATIONS: *C. F. P.* The border Carnation generally thrives in ordinary good garden soil, but as your ground is rather light it will be well to incorporate a good proportion of fibrous loam and to also add either slaked lime or finely sifted mortar rubble. Plant very firmly and do not allow the plants to suffer from lack of moisture. October and March are the best months for planting; unless the situation is very damp the former is the best time, as the young plants become well established before their flowering season. But in cold, wet soils it is generally necessary to winter pot plants in frames and plant them out-of doors in March. To have a succession of first class blooms it is necessary to raise young plants by layering at least every other year. The layers should be pegged down as soon as the flowering season is over. A good selection of standard varieties includes Bookham White; Basuto, crimson; Brigadier, scarlet; Mrs. Elliott Douglas, yellow; Duchess of Wellington, lavender; Ellen Douglas, silvery grey; Fuyuyama, red; Elizabeth Shiffner, orange; Greyhound, heliotrope; Innocence, blush pink; Mrs. Robert Gordon, pink; Rosy Morn, rose-pink; Miss Willmott, coral-pink; Mrs. Andrew Brotherstone, purple and white; Mrs. A. J. Keen, yellow edged with rose; Montrose, white marked with scarlet; Zulu, dark maroon; and Purple Emperor

CATERPILLARS ON COPPER BEECH: *J. A.* The caterpillars are those of the Buff Tip Moth, which is always very common in this country

COLOURED POTATOS: *R. P. and N. D.* The specimens sent are self-coloured sports from King Edward. Such sports are fairly common, and will remain fairly true when propagated, but they show no advance either in cropping capacity or in quality on King Edward.

CREOSOTE AS A CURE FOR MILDEW: *W. P. N.* We have submitted your query to Mr. C. E. Bridgett, who has replied as follows: "While the vines are dormant, prune and rub off the rough bark. Mix clay with creosote until the mixture is of a paint-like consistency, and then apply it with a paint-brush to rods and spurs, taking particular care to fill up all crevices but not to paint the buds. My experiment was carried out last winter on Muscat of Alexandria and Black Hamburgh vines only, so that it is quite possible other varieties may not stand the treatment. I note *Market Grower's* appreciation of creosote as a cure for American Blight on Apple trees, but would state that it is only applied to the old wood, as it will kill green wood, therefore I find it best to cut away and burn all badly infested young shoots."

FRUIT AND VEGETABLE FARMING ABROAD: *Columbus.* Full particulars of the conditions which obtain may be had from the Agents-General of the countries referred to. There will be good openings for market gardening, especially fruit cultivation, in many countries after the war, but experience and capital are necessary, and the former can only be obtained by residence in the country you elect to start business in. Apply for information to the Consul General, Argentina, 601, Salisbury House, E.C.; the United States Consul-General, 42, New Broad Street, E.C.; and to the Agent General for British Columbia, 1, Regent Street, S.W.

NAMES OF FRUITS: *T. B.* Apple Handbling's Seedling.—*J. D.* Apple Early Nonpareil (syn Hicks' Fancy).—*J. P. and Co.* Apple Washington.

NAMES OF PLANTS: *J. Potts.* Artemisia vulgaris (Mugwort). It is sometimes grown in gardens.—*T. Brockbank.* 1, Leaves of a species of Salvia (not recognised); 2, Borago officinalis (Borage).—*L. S. Ilmenauth.* 1, Sidalcea spicata; 2, Chenopodium polyspermum var. cymosum; 3, Rumex crispus; 4, Verbesina encelioides; 5, Aethusa Cynapium.—*T. J. C.* Rubus phoenicolasius (Japanese Wineberry).—*G. B.* 1, Pyrus rotundifolia; 2, Crataegus Crus-galli var. pyracanthifolia; 3, Crataegus mollis; 4, C. melanocarpa; 5, Calluna vulgaris purpurea.

ONIONS DISEASED: *G. F.* The Onions are suffering from an aggravated attack of Onion Mildew, caused by the fungus Peronospora Schleideniana. Collect and burn all diseased plants, and scatter over the remaining healthy ones a mixture of powdered quicklime and sulphur, in the proportion of one part of lime to two of sulphur.

OVERGROWN FRUIT TREES AGAINST A FENCE: *G. E. T.* Plum and Cherry trees which have received no attention during the past two or three years are not easily brought under control and limited to the fence-space provided. Severe pruning would mean the removal of a large amount of the growth above the top of the fence and this would encourage further growth at the expense of fruit production. If it is possible to do so remove the branches from the fence and lift and replant the trees directly the leaves show autumnal colouring. A little root pruning may be desirable. Lime rubble and some fresh soil should be provided, and the whole made very firm about the roots. Everything should be made ready, so that replanting, on the same site, may immediately follow lifting. Give a thorough watering. Tie up the branches loosely to prevent damage by wind, and syringe them on warm days so long as the leaves remain. Later on, when the soil and trees have settled again, rearrange the branches and nail or tie in all that room can be found for. Do not be afraid to head the branches and endeavour to furnish the whole of the fence. Remove all awkwardly placed shoots as the work proceeds, and, if necessary, cut some of the branches back to the base of the tree.

PREPARING HOME-GROWN TOBACCO FOR SMOKING: *H. B.* It is usual to harvest Tobacco as soon as the leaves are ripe, commencing with the lower leaves, which are always the first to arrive at proper condition. "Ripeness" is indicated by loss of smoothness and gloss, by increase of substance and brittleness, by change in colour, by curling of the edges and the drooping of the leaves. Gather the leaves as they ripen and string them back to back, on thin twine. Deal separately with the leaves harvested at each gathering and hang them in a shed where ventilation can be controlled and artificial heat provided if necessary. Probably a greenhouse could be so adapted as to serve as a drying shed. The curing of the best pipe Tobacco is a somewhat complicated process, as atmospheric moisture must be controlled as curing proceeds. Full particulars of the cultivation, harvesting, and curing of Tobacco, as practised in Ireland, may be obtained from leaflets published by the Department of Agriculture for Ireland, Upper Merrion Street, Dublin, and sent post free on application

PRICES FOR HOME-GROWN ONIONS: *H. J. B.* So far as we are aware the Order fixing the prices for home-grown Onions, as published in *Gard. Chron.*, April 20, 1918, has not been rescinded. We understand, however, that a new Order on the subject will shortly be issued by the Food Production Department.

PRUNING CLEMATIS: *Dun.* Clematis belonging to the Jackmanii and Flammula groups, and also some of the lanuginosa forms, may be pruned severely in late winter or very early spring, some time before new growth commences. Unless a specimen has become excessively crowded with growth it is not desirable to cut back the whole of the growths. A better plan is to cut a proportion of the stems well back, and thin out the remaining growths.

ROOT PRUNING TRAINED FRUIT TREES: *A. F. B.* Take out a trench 2 feet from the stems of the trees, and all along one side of the row. Remove the soil with a fork so as not to damage fibrous roots unnecessarily. Cut back strong roots and bring the finer roots nearer the surface. Work underneath the root system and sever strong, downward-growing roots. Add a little lime rubble when filling up the trench and ram the soil firmly. With reference to double digging or trenching in the kitchen garden where there are standard Apple trees, it will be almost useless to trench nearer than 6 feet from the stems, because vegetable crops will not succeed under the spreading branches of the trees.

SUGAR FROM SUGAR BEET: *W. L.* Clean and boil the Beet until well cooked, then rub the skin off and cut the roots into thin slices and chop finely. Put 2 pints of water into an enamelled saucepan and bring it to the boil, then add 2 lbs. of the chopped, cooked Beet and boil with the lid on for three-quarters of an hour. Press the whole through a fine sieve and then strain it through a cloth. Put the strained juice into a clean saucepan, bring to the boil again, and add half a teaspoonful of bicarbonate of potash. Keep the juice boiling until it is reduced to one-third, then pour it into a hot bottle and cork tightly at once. There should be about 6 ozs. of sugary syrup.

USEFULNESS OF CYDONIA FRUITS: *Solopian.* The fruits of Cydonia (Pyrus) japonica may be used for jelly-making in the same way as the fruits of the common Quince. Fruits of Cydonia Maulei may also be used for the same purpose.

VEGETABLES FOR GROWING IN A CONSERVATORY: *G. M. S.* Tomatos may be grown in the conservatory during the winter, but their cultivation is hardly a profitable business, having regard to the fuel necessary to maintain the requisite temperature. If salad plants are in demand, a regular succession of Mustard and Cress could be grown, and Cos Lettuces, raised thickly in boxes and cut while quite young, would serve in the absence of larger examples. Under the plant stages or in a darkened part of the house Rhubarb and Seakale could be forced easily. If not too lofty the conservatory would be a very suitable place in which to raise vegetable seedlings early in the New Year for the purpose of securing sturdy plants for setting out of-doors as soon as the condition of the weather permits.

Communications Received.—C. C. B.—C. E. F.—S. A.—W. L.—J. G.—H. S. S.—H. R. W.—J. C. W.—S. A.—J. W.—J. W. F.—G. W.—J. A. P.—F. L. B. B.

THE

Gardeners' Chronicle

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CONTENTS.

ILLUSTRATIONS.

THE CONTROL OF ROSE DISEASES.

IN recent years vast improvement has taken place in the colour and form of the Rose and its freedom and continuity in flowering. The flowering period, which formerly ended in July, has, through the efforts of the hybridiser, been extended to late autumn, and in mild seasons to Christmas. This is a great gain, and has given to the Rose a first place among hardy English flowers. But the gain has been accompanied by a serious increase in the destructive character of fungous diseases among the plants. Mildew makes the loveliest foliage unsightly, weakens the plants, and spoils the flowers. Black Spot defoliates the stems in late summer, and ruins the autumn flowering, while crown canker—a comparatively new disease—will in a few years destroy the plants altogether.

It is not so much that Roses are more susceptible to disease than was formerly the case; in fact, I think the contrary is more likely to be true, for many of the older Roses were prone to be affected by disease if it came their way. John Hopper and Baroness Rothschild will fall victims to mildew as readily as Killarney, while we have a few modern Roses nearly mildew proof. It is rather that the great increase in the number of Roses grown has provided more hosts for the diseases and enabled them to spread more generally.

This being the case, efficient and ready methods of controlling and combating diseases have become almost as essential to the continued popularity of the flower as improvement in its form and habit. This has been specially impressed on the rosarian by the difficulties he has met with during a four years' war, when labour has become increasingly scarce, and he has had many other matters on hand to distract his attention from Rose growing.

Hitherto the methods chiefly relied on to control disease have been spraying the plants with some fungicide, such as cyllin or carbolic soap, or proprietary specifics such as Abol and Vek. It was soon recognised that these methods were preventive rather than curative, that to be even moderately successful spraying had to be repeated at intervals of ten days or so, and, moreover, to be done with a certain amount of skill, while in wet weather the protection afforded was of the slightest. Lime sulphur and Bordeaux mixture are more satisfactory in one sense, namely, that they adhere longer to the foliage and are less easily neutralised by rain, but they have the great disadvantage that they quite spoil the appearance of the foliage, Bordeaux mixture covering the leaves with a fine, bluish-green dust, while lime sulphur leaves a number of small white spots completely covering the foliage and impairing its beauty.

In the circumstances, an article by Dr. L. M. Massey, Plant Pathologist, Ithaca, N.Y., contained in the *American Rose Annual*, the third number of which has recently been distributed, becomes of more than ordinary interest. Dr. Massey has for the past two years been conducting an investigation into diseases of the Rose, both by inquiry among a large number of Rose growers and by careful experiment. About 600 Rose plants are being grown under experimental conditions in the greenhouses of Cornell University, and Dr. Massey is not only experimenting in the control of the better-known diseases, but is also investigating new diseases, while life-history studies of several fungi are in progress. He considers that the results to date are all that could be expected, and are very encouraging.

In the article before me he deals with crown canker, black spot, and mildew. Plants suffering from crown canker disease are affected at the crown, usually just at the surface of the soil, the definitely diseased region extending several inches above the ground. The union of scion and stock and the area immediately above it are the most common points of attack. Affected plants do not die quickly, but linger on, and yield progressively poorer and fewer blossoms. Moisture plays an important rôle in the severity of the disease, and inoculations made several inches above the soil frequently made no progress unless kept moist by being surrounded by wet cotton. This seems to have led one grower to adopt a system of planting whereby the graft union is above the soil, with the object of preventing infection at that point, and he also removes the soil from about the crown to secure a dry condition at that susceptible part. Dr. Massey, however, considers these methods objectionable. He has as yet obtained no definite results in the control of the disease, and thinks the control may resolve itself into some method of soil sterilisation. The fungus grows well in both acid and alkaline media, so that the possibility of control by developing an acid or alkaline condition of the soil does not appear to be promising. From the progress of his experiments he hopes to be able to offer growers definite advice in the near future.

With the control of black spot and mildew he has been more successful, and considers that a sulphur arsenate dust mixture is an efficient control, amounting almost to a specific.

Experiments were carried out in the Nursery and also in the Test Garden of the American Rose Society at Ithaca, N.Y., various sprays and powders being used, including sulphur arsenate (a mixture of 90 parts sulphur with 10 parts arsenate of lead, applied as a dust), Bordeaux mixture, ammoniacal copper carbonate, and lime sulphur. The treatment was applied at the end of May, and twice in each of the three succeeding months. For black spot, sulphur arsenate, Bordeaux mixture, and lime sulphur were found to be efficient fungicides, ammoniacal copper carbonate being less satisfactory. On the contrary, in the case of mildew the bushes treated with sulphur arsenate were found practically free from this disease, which developed severely on those sprayed with lime sulphur and Bordeaux mixture.

Dr. Massey therefore considers the sulphur arsenate dust not only superior in fungicidal qualities, but less liable to render the plants unsightly than Bordeaux mixture or lime sulphur. The article gives careful details of the experiments, and should be consulted by those interested in the subject.

Sulphur has been long used in this country as a fungicide, and, under glass, where there is no wind and conditions of moisture can be regulated, and, moreover, it can be dusted over the hot water pipes, it is practically a specific and efficient control of fungous disease.

A certain amount of warmth, however, seems to be essential for its maximum value, and, used alone, it is comparatively of less efficiency in windy and rainy weather. It remains to be seen whether in combination with arsenate of lead it is of more value than when used alone under these conditions.

The best time for its application seems to be early morning during spells of hot, sunny, and still weather, while the dew is still on the plants.—*White Rose.*

ORCHID NOTES AND GLEANINGS.

ODONTOGLOSSUM CENTAUR.

A PRETTY and graceful hybrid not previously recorded, obtained by crossing Odontoglossum Edwardii and O. harvengtense (crispum × triumphans), named Centaur, is now flowering in two varieties in the gardens of Mrs. Bischoffsheim, The Warren House, Stanmore, Middlesex. The plants bear the long, branched spikes of O. Edwardii, and in size and colour the flowers approach nearest to that species, but the form of the lip and its crest bear distinct evidence of O. triumphans. In their early stage the flowers, which are about 2 inches in width, are deep claret-purple with lighter colour in the margins and tips. When mature they assume a

gold bronze tint, showing the yellow and brown of O. triumphans as a ground-colour.

CATTLEYA SYBIL VARIETIES

IN *Gard. Chron.*, August 21, 1915, p. 119, illustrations were given showing remarkable variation in forms of Cattleya Sybil (Dowiana aurea × rubrescens), one of the plants illustrated having the form of C. bicolor, with its narrow, elongated lip, and the other the shape of C. Eldorado, the lip having a tubular base with ample expanded front as in C. Eldorado, the reversions being to the two species which were the parents of C. iridescens.

Plants of a small batch, several of which have flowered in Mrs. Bischoffsheim's gardens, The Warren House, Stanmore, give similar evidence of dissimilarity. So far as they have been proved, those of the type nearest to C. bicolor are the most frequent, but one in flower at the present time of the C. Eldorado type closely resembles the variety rotunda bella in the illustration mentioned. The fragrant flowers are light yellow: the labellum has a mauve-coloured front, orange disc, and gold lines at the base.

at the roots for several days afterwards: overhead sprayings twice daily will suffice for a time, but much depends in this respect on the climatic conditions. The soil must never be allowed to get really dry nor be unduly saturated. For several weeks after the final potting water should be applied overhead through a coarse rose can, but after the middle of October this method would destroy the flower buds, and should be discontinued. Indeed, to be quite safe, overhead watering and spraying should cease after the third week in September. From that time onward extra care is necessary in applying water to the roots. Not the slightest trace of moisture should be allowed to reach the base of the flower-stems, for the least carelessness with the water-pot will kill the flower-buds. If the corms are placed high in the pot at the final potting the chance of water getting amongst the buds will be lessened.

While not a gross feeder, the florist's Cyclamen, nevertheless, is greatly benefited by judicious feeding. As soon as the flowering pots are well filled with roots, weak doses of clear soot-water should be given twice a week, to be followed after two or three weeks with weak

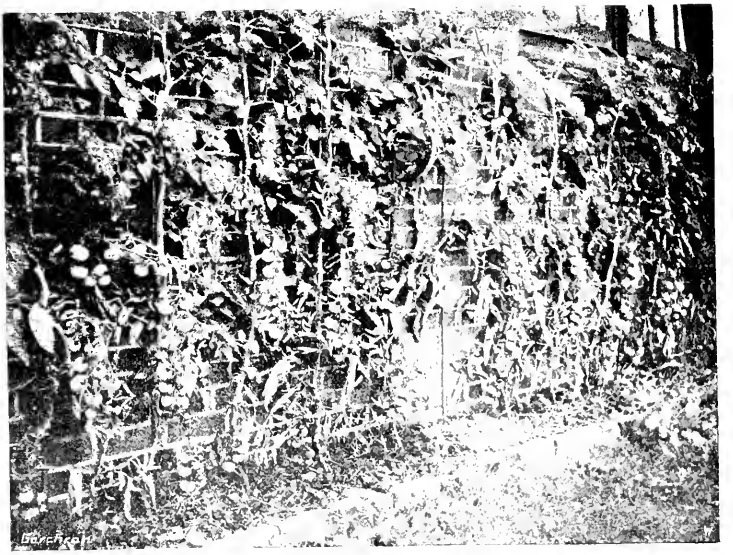

FIG. 57.—TOMATO BIDE'S RECRUIT GROWN IN THE OPEN.

FLORISTS' FLOWERS.

CYCLAMEN LATIFOLIUM.

I READ and re-read with very great pleasure the interesting and instructive article on "Cultivation of Cyclamens," by Mr. J. W. Forsyth, in the issues for July 20 and 27. I have taken more than ordinary interest in these fine plants for the last quarter of a century, and, like many others, had but indifferent success at first. For the past fifteen years, however, I have been very successful, and each season have a good batch of these superb winter and early spring flowers.

Mr. Forsyth did not deal with watering, overhead syringing, feeding, and insect pests, and the following remarks on these subjects may be useful to growers.

As the soil at the final potting should be of a fairly substantial nature, unless watering is done very carefully, the compost will be liable to become sour, resulting in a serious check to the plants. As soon as potting is finished the plants should be watered thoroughly once to settle the soil, and moisture should not be given liquid manure made from sheep or cattle droppings, and this stimulant also should be applied about twice a week. Ichthemic guano is a good food for Cyclamens. Commence with a dessertspoonful to 1 gallon of water once a week, and later use a tablespoonful twice a week. It is desirable to vary the food, and these three stimulants may, with advantage, be given in alternate weeks.

When grown in proper conditions the Cyclamen is not unduly troubled with insect pests, but where the accommodation for growing the plants is not entirely suitable, green fly, thrip, red spider, and mite often attack the leaves and flowers. If the pit or house in which the plants are growing be vaporised once every three weeks it is a fairly easy matter to keep the plants clean. This specific is also a certain cure for green fly, if present. But where the other pests mentioned are present spraying with a solution of XL All liquid insecticide, at fairly frequent intervals, is useful, while for bad attacks dipping the plants in a 20-to-1 solution of the same specific will be effectual. At this strength it is certain to destroy the insects, but dipping should be repeated in three days, and finally again three days later. *C. Blair, Preston House Gardens, Linlithgow, Scotland.*

TOMATO BIDE'S RECRUIT.

THIS Tomato is proving itself as valuable for cultivation in the open as under glass. The illustration in fig. 57 shows plants growing here against a wall with an eastern aspect. The plants are 5 feet high and bearing profusely; some of the trusses are carrying twenty fruits each. The fruits are of medium size, smooth, bright red in colour, and the flavour is of the best. *E. Molyneux, Swanmore Park Farm, Bishop's Waltham, Hampshire.*

LETTERS FROM SOLDIER-GARDENERS.

NOTES FROM EGYPT.

IN the future the Sinai Peninsula may be more frequented by visitors than hitherto, because the difficulties of travel overland between Egypt and Palestine will be removed by the railway which now links the two countries and is the means of redeeming the rich plains of South Palestine from the decadence into which they have sunk.

A few miles east of the Suez Canal the large Oasis of Katia is most refreshing and restful, with its many acres of Date Palms, set amid a desolate region of undulating sand. The Palms are of large size, and each yields a bountiful crop of fruits. At the time I was there (not by personal choice) the fruits were ripening, and I noticed some trees bore deep golden-yellow Dates, while the majority carried those of the characteristic brown colour.

On the outskirts of the Katia Oasis there were newly planted trees in various stages of growth. The procedure is to make a rather wide trench by removing the loose sand to a depth of about 18 inches or 2 feet. A moist planting medium is thus found for the young trees. The leaves are drawn together at planting-time by means of a wisp of the coarse grass that grows sparsely in clumps near the groves: this is for the purpose of minimising the harmful effect of wind and sun. I imagine planting is done at about the time the fruits are gathered from the old trees, consequently the young trees become established before the return of the hot months.

Near the old-time frontier at El Arish there is another considerable area of Date groves, as well as large tracts of land under Fig trees. Some of the latter are of considerable size and planted at regular intervals, without the least indication of overcrowding. After a young tree is established no further attention appears to be needed. Although it never rains here during the long hot season, the trees perfect their crops and do not suffer to any extent from drought. It is a most remarkable thing that the sand is moist below the loose surface, and water is invariably found at very little depth in this part of the desert.

Caryopteris Mastacanthus is in flower in many gardens, and it deserves to be included where a collection of flowering shrubs forms a feature for the embellishment of the grounds. The flowers are blue, and borne on the terminals of the current year's growth. The cultural requirements of this plant are not exacting, neither is it particular as to position, provided that it is not planted under trees or allowed to be overgrown by more robust neighbours. On the sides of some of the wadis in Palestine this plant grows wild, forming fair-sized shrubs. With it Arundo Donax flourishes abundantly. I have not seen this grass grown successfully in Great Britain. Although I have seen its cultivation attempted in the south, the results did not produce a true indication of the plant's characteristic proportions. *F. Gooch, Palestine, August 10, 1918.*

FOREIGN CORRESPONDENCE.

THE BARCELONA EXHIBITION.

IN response to an enquiry as to the progress, from a horticultural point of view, of the great exhibition to be held at Barcelona after the war, we have received the following interesting letter from Monsieur J. C. N. Forestier, director of the horticultural section, who is best known to readers of the *Gardeners' Chronicle* as the *Conservateur* of the beautiful promenades of Paris, including the Bois :—

"The Barcelona Exhibition will include an International section, and a section exclusively Spanish.

"It was first planned to take place at no specific date, but to be opened a year after the cessation of the war. Work was begun in 1914, and pursued with activity, so as to be quite ready as soon as circumstances permitted the organisers to announce the date of opening. The site chosen comprises the whole of the northern slope of the mountain of Montjuich. A short time ago this mountain, situated between Barcelona and the sea, crowned by the famous citadel which commands the town and the port, was very difficult of access, there being no carriage way, and the place being separated from the town by a very poor quarter. The aim of the official Commission of the Exhibition (which is collaborating for the purpose with the town authorities and the Government) is to utilise the site firstly for the purposes of the Exhibition, and afterwards to make it form part of a scheme of permanent gardens and pleasure walks.

"The Commission has made a point of undertaking first the preparation of the roads leading to the mountain, and of the gardens which will at first be the gardens of the exhibition, and afterwards the public gardens of the town.

"The chief difficulty in the task which lies before us is the impossibility of forming beforehand a simple plan of construction for the scheme. One is under the necessity of uniting a number of small details into a complete whole which shall be not merely a collection of small gardens, but a homogeneous exhibition. Besides this, a great part of the ground chosen for the site is merely lent to the Exhibition authorities, and will have to be returned to the various owners after the Exhibition has been held. I have therefore adopted the plan of utilising the site at my disposal (which is very varied) to form a number of gardens of different kinds, which are united either by avenues of trees, or by paths from the one to the other, where they lie close together.

"I do not think it is part of the scheme to hold an International Horticultural Exhibition, but the love which is gradually developing in Spain for everything connected with flowers and gardens may lead to a modification of the original plans in this respect.

"The climate of Barcelona is almost exactly that of Nice, but the slope of Montjuich which has been chosen as the site of the Exhibition turns its back to the sea, and is exposed to the north wind. It is composed of solid rock, in which are hollowed out the crevices on which practically the whole town is built, and which contain, however, a considerable depth of very good soil. The flattest portions have the reputation of producing the best Wheat in the country."

BULB GARDEN.

LILIUM SULPHUREUM AND L. NEPALENSE.

MENTION of this grand Lily by Mr. Watson in his 'Notes from Kew,' p. 55, serves to carry one's memory back nearly thirty years. To be exact, it was first publicly shown, by Messrs. Low, then of Clapton, at the meeting of the Royal Horticultural Society, on June 27, 1889, when, as Lilium Wallichianum superbum it was awarded a First-class Certificate by the Floral Committee. A good deal of controversy arose over the name, the plant being generally regarded as distinct from L. Wallichianum, in bulb, habit, and flower, as to entitle it to specific rank. The name of L. Wallichianum superbum was given to it by Mr. Baker, but after a time that authority revoked his previous decision, and named it L. sulphureum, a name it still bears.

At the time of its introduction Messrs. Low stated that the bulbs came from a considerable elevation on the hills in Burma, where the climate was quite temperate. It has proved to be the most robust of the Burmese Lilies, though hardy only in particularly favourable districts in this country. Its late season of blooming militates against its use out of doors. The bulb is large, firm, and of a reddish-brown tint, while the stem is thickly clothed with narrow, pointed leaves, which gradually become broader towards the top of the stem. The flower is fully described by Mr. Watson in his article referred to. A notable feature of this Lily is the presence of a number of small bulbils in the axils of the leaves, which afford a ready means of propagation.

I have often found that bulbs of L. sulphureum are late in starting into growth, but when the stem makes its appearance it grows rapidly.

Somewhat less than a year previously, namely, on September 11, 1888, Messrs. Low had flowered another Lily, around which great interest was centred. This was Lilium nepalense, a species concerning which there were many and diverse opinions. It is said to have first flowered in this country in 1855, but it is quite feasible if it was the true species, such as we have frequently seen within recent years. The stock has been to a great extent kept up by importations, as the plant does not readily conform to culture in this country. Still, imported bulbs as a rule flower well the first season. L. nepalense is essentially a greenhouse species, and is wanting in the robust constitution of L. sulphureum. It is, however, such a distinct Lily as to well repay extra trouble in cultivation. The flowers, which are regularly curved, are, in the centre, of a rich purple colour, while the upper part of the segments are yellowish green or greenish yellow. The depth of the purple colouring and the amount of the flower covered by it is also very variable. As stated by Mr. Watson, some of the finer Burmese Lilies have disappeared, and in these circumstances the same fate will in all probability befall L. nepalense. *W. T.*

A NEW HYBRID LILY.

A NEW hybrid Lilium (see fig. 30), which flowered for the first time in 1917, was shown before the Floral Committee of the Royal Horticultural Society on August 27, 1918, and received an Award of Merit together with the name of Lilium Parkmannii Hayward's variety.

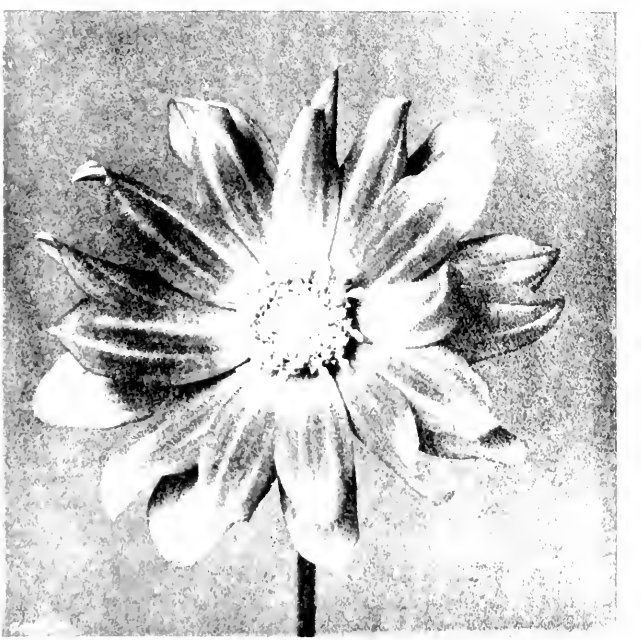

FIG. 30.—PARKMANN'S SOUTHERN STAR.—COLOUR SCARLET, STREAKED WITH YELLOW, AND SHADING TO PINK AT THE TIPS OF THE SEGMENTS. (R.H.S. Award of Merit and N.B.S. First-class Certificate, August 27, 1918.)

(See p. 110.)

The production of a first-class hybrid between the two fine and spectacular groups of Lilies is a notable event, and the long lapse of time between the arrival of L. Parkmannii and the flowering of the newcomer makes the new hybrid doubly welcome.

As the raiser of the latter I regret that L. Parkmannii did not exist in cultivation long enough to gladden the eyes of latter-day Lily-lovers—myself among them. I have had many chats with growers of the older generation, who can remember L. Parkmannii when it was at its best, and some of these who saw the new Lily after the meeting of August 27 asserted that it was not L. Parkmannii. Mr. Perry, of Enfield, whose interest in Lilies no one will dispute, has seen the new hybrid, and is certain that it is not L. Parkmannii, as it differs from the latter in form, petal, and in colour. Mr. Perry, who has had access to the wonderful collection of Lily paintings of Dr. Reed, of

Petrograd, gave me a detailed account of the differences between the two Lilies.

I do not wish to question the decision of the R.H.S. Floral Committee, but I should certainly like to see the whole question of nomenclature cleared up. The new Lily can hardly be a variety of L. Parkmannii, as the latter disappeared from gardens long before the coming of the present Lily, and of course took no part in its production. Further, Mr Parkmann's account of his hybrid gives L. auratum as one parent, whereas in the present hybrid L. aura-

The Week's Work.

THE KITCHEN GARDEN.

By E. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

Celery.—Take advantage of dry days to place a few inches of soil round the stems of early Celery. It is a mistake to add much soil at one time or long before the plant has completed its growth. Early Celery may be easily blanched by binding the stems with thick brown paper or the special collars sold for the purpose. Tie the stems carefully together with soft binding material before placing the soil close to the plants, and remove the ties when the earthing up is completed. In dry weather waterings are necessary; it is almost impossible to overdo the watering of Celery, but moisture should always be given before soil is added to the plants. Break up the soil finely before using it for earthing-up and dust it freely with soot to check both slugs and worms.

Carrots.—Where early sown, stump-rooted Carrots are still in the ground the roots should now be lifted and stored in a cool spot or in pits. Roots that remain in the ground after this date become hard and dry and of little value. Thin out late Carrots sown in frames to 3 inches apart and keep the soil clear of weeds.

Cabbages.—Transplant August-sown Cabbages as soon as they are large enough for transference; small plants do not receive so great a check in transplanting as large specimens. Early, small-hearted sorts, such as Harbinger, may be planted 15 inches apart and such kinds as Flower of Spring 18 inches apart each way.

Turnips.—The roots should be thinned to 4 or 6 inches apart and the rows dusted with soot at short intervals. Draw each alternate plant for use as required, leaving the others to remain for winter use. Hoe the ground on frequent occasions to encourage a quick growth.

Leeks.—Pay extra attention to this most important crop, which serves as a substitute for Onions when the latter are scarce. Keep the ground between the rows frequently stirred and the roots well supplied with water and weak liquid manure.

Winter Spinach.—Spinach raised from seed sown as advised last month should be encouraged to grow freely. Extra attention is necessary where the soil is of a heavy nature, or the plants may soon be destroyed by slugs. Dust soot and lime amongst the plants and frequently stir the soil. Only on warm borders where the soil is light and rich should Spinach seed be sown after this date.

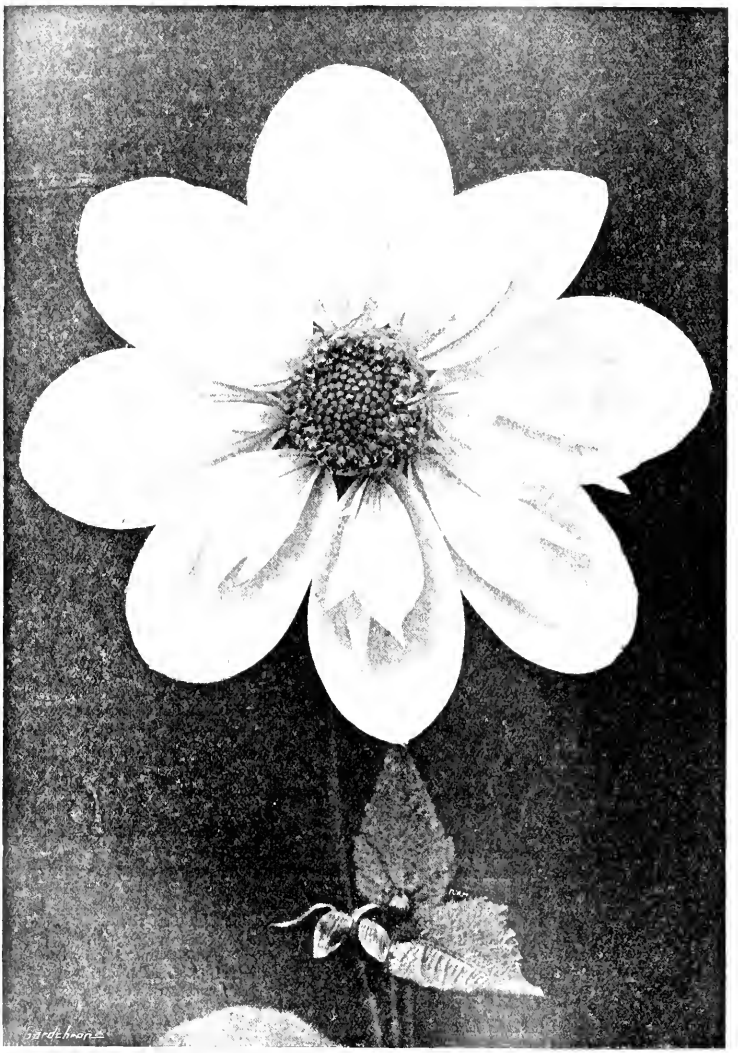

FIG. 58.—A GOOD TYPE OF COLLERETTE DAHLIA (Georgina, a pale lemon-yellow variety.)

tum . . . Hyde was the parent a very different . . . to the typical L. auratum.—P. S. *Hargreaves*, ...

[If a hybrid has been raised between two distinct species, and only named and recorded, any other hybrid raised by crossing a varietal form of one of the same species with either the type or a varietal form of the other species, becomes a variety of the original hybrid, even though the latter has become lost to cultivation in the meantime.—EDS.]

THE ORCHID HOUSES.

By J. COLLIER, Gardener to Sir JEREMIAH COLMAN, Bart., Gatton Park, Reigate.

Calanthe.—Deciduous Calanthes are in full growth and forming new pseudo-bulbs. If they are healthy, well-rooted specimens the roots will require more water at this season than at any other time of the year. It is important that the plants should be exposed to as much light as possible, without permitting them to be scorched by the sun. They should be placed near the roof-glass and whenever possible allowed plenty of fresh air.

Masdevallia.—The best months for repotting or top dressing the majority of Masdevallias are the beginning of September and February. The present time is preferable, as the roots are more active during September and October than at any other season, and, in addition, the weather conditions are cool and moist, therefore favouring a quick re-establishment of the plants. New leaves are developing and new roots will soon be produced; the latter will quickly grow into the fresh compost and be well established before winter. Healthy plants that have outgrown their rooting space, with compost in good condition, may be turned out of their pots and placed into larger receptacles with as little root disturbance as possible. Large, overgrown specimens that have become bare in their centres may be divided, and the best portions potted separately into the smallest-sized pots that will accommodate them. The smallest pieces may be placed several together in small pots, and, by next February, they should be in a suitable condition for transference to larger receptacles. Others that have sufficient rooting space for another season's growth, will, provided the compost is in good condition, not require repotting, but some of the soil may be removed from between the surface roots and fresh material substituted for it. Previously to repotting the plants it is advisable to withhold water for a few days, for the drier the roots the less liable are they to be injured. Masdevallias of the stronger-growing kind are vigorous rooting plants, requiring plenty of rooting space, and they are best grown in pots or deep pans. They include M. Veitchiana, M. ignea, M. Lindenii, M. Gargantua, M. Mooreana, M. macrura, and the numerous members of the Harryana type. Others that are not of such vigorous habit include M. Courtauldiana, M. Chelsonii and M. Stella. All those mentioned above may be grown on the plant-stage near to

the roof-glass. The dwarf-growing kinds—M. Armini, M. Shuttleworthi, M. picturata, M. muscosa, M. O'Brieniana, M. tridactylites, and others of this section—should be placed in shallow pans and suspended from the roof-rafters. A suitable compost for Masdevallias is a mixture of half-decayed Oak-leaves that have been rubbed through a half-inch sieve, short pieces of A1 Fibre, and portions of Sphagnum-moss in equal proportions. Crushed crocks and coarse silver sand should be incorporated with the other materials. The pots should be two-thirds filled with clean crocks for drainage. Pot moderately firmly, keep the base of the leaves level with the rim, and carefully work the compost between the roots. Do not afford much water until the roots commence to grow into the new compost. Shade the plants for a time from bright sunshine, and maintain a moist atmosphere. Masdevallias delight in plenty of fresh air, but cold draughts should be prevented. If a special house is not available for these Orchids they may be grown in the warmest and shadiest part of the Odontoglossum house. The white M. tovarensis, the yellow-flowered M. Davisii, and those of the Chimaera section are best repotted in February, and may be kept in a slightly warmer house during the winter months than the others.

PLANTS UNDER GLASS.

By E. HARRISS, Gardener to Lady WANTAGE, Lockinge Park, Berkshire.

Gloriosa superba.—Gradually reduce the supply of water at the roots of Gloriosas to allow the plants a period of rest. When the foliage has died down place the plants underneath a stage in a cool house or in a dry, frost-proof shed. Turn the pots on their sides in order that the roots may be kept perfectly dry during the winter.

Fuchsia.—A fresh stock of Fuchsia plants should be raised annually from cuttings, which may be inserted now. There are plenty of young shoots on the old plants suitable for use as cuttings. These should be inserted in a sandy compost in 5 inch pots. Make the soil firm about the base of the cuttings. Thoroughly water the soil once and plunge the pots in a moderately warm hot-bed in a propagating case. Keep the cuttings shaded from bright sunshine until roots form, and afterwards grow them on steadily in a light glasshouse near the roof-glass in a temperature of about 50°.

Tulips.—As soon as the bulbs are to hand those which are to be grown in pots should be attended to at once. Use a rich compost and pot firmly. Plunge the pots containing the bulbs in a bed of ashes in the open until the shoots have grown an inch or two, then transfer them to a cold frame.

Narcissus. All kinds of bulbs, including Narcissi, should be well established in their pots before they can be forced successfully. The bulbs should be procured as soon as possible and placed in their flowering receptacles. Paper White, Trumpet Major, Golden Spur, Emperor, Sir Watkin, Madame de Graaff, Barrii conspicuus and Elvira are all suitable sorts for pot culture.

Housing Plants.—Suitable houses should be prepared for the wintering of Cyclamens, Primulas, Bouvardias, Pelargoniums, and Salvias. Low houses or heated pits are the most suitable for those plants. Let the glass be perfectly clean both inside and out, and grow the plants near the roof-glass.

THE HARDY FRUIT GARDEN.

By JAS. HUDSON, Head Gardener at Gunnersbury House, Acton, W.

Gooseberries.—Sometimes old Gooseberry bushes may be rejuvenated by being cut hard back, but if marked decadence is manifest then it is a better plan to arrange for a new plantation. The new site should be on ground where bush fruits have not been grown for several years. Cordon-trained plants are very serviceable, as, when they are employed, more use may be made of any given area, and the picking of the fruit is rendered easier. In selecting Gooseberry bushes exercise every caution with respect to the Gooseberry mildew. An early inspection whilst the leaves are still fresh will be advisable in any case.

Currants.—With respect to Red and White Currants one needs, as in the case of all bush fruits, to choose them from a quarter in a nursery. I like to choose bushes with a slightly more pronounced stem than is, as a rule, obtainable. There should be, in my opinion, a clear foot of stem before any branches radiate from it. I also strongly advocate standard plants of Red and White Currants. Not only are these ornamental, but from a utilitarian standpoint they are most commendable, as they will provide a good supply for the latest pickings. Standards are easy to manage and quite easy to net securely. A clean stock of Black Currants is most desirable. A few years ago it was stated that Boskoop Giant was immune to attacks of Big Bud, but I have not found the statement to be true.

Cordons.—A great deal more use should be made of cordon-trained Gooseberries and Currants for clothing bare spaces on walls. These trees will thrive well on a northern aspect, and are not troublesome to manage. Double cordons are to be preferred.

The Raspberry and Allied Fruits.—It pays well to make new Raspberry plantations and burn the old stock. The new planting, however, should be done one year in advance in the case of summer-fruiting varieties, but autumn-fruiting varieties will yield a good crop the first autumn after planting and well within the year. To me it is a surprising fact that so few of these late-fruiting varieties are cultivated. Of the summer fruiters there is a good choice; Superlative does not thrive in every garden, but there are Hornet and Baumforth's Seedling from which to choose. When purchasing Raspberries make it a condition that they are well packed, so as to prevent the roots from suffering, and when received plant them at once. The Loganberry, the Newberry, and the Lowberry are all well worth growing, and they thrive in almost any garden.

FRUITS UNDER GLASS.

By W. J. GRISS, Gardener to Mrs. THOMPSON, Keele Hall, Newcastle, Staffordshire.

Cucumbers.—Where Cucumbers are required in winter, vigorous young plants should be set out at once in narrow ridges or small mounds of compost placed on stages. The use of fermenting material is advisable, therefore a good layer of leaves and stable litter in equal proportions should be placed in a ridge and made firm. Small cones of soil may then be placed for the reception of the plants, adding more of the compost as the roots require it. Stop the leading shoot when it has grown half-way up the trellis, and pinch all laterals at the first joint beyond the fruits.

Renovating Established Plum Trees.—Old, established Plum trees in borders, which are not giving satisfactory results, should be given attention directly the crop is gathered. The borders need to be renovated periodically, for if this is not done growth becomes stunted and the trees gradually die from exhaustion. In such cases the best method is partly or entirely to renew the borders during the next few weeks, as if the work is done early in the autumn the roots will become established again before winter. The best compost for Plum trees is tough, fibrous loam of a calcareous nature; if the soil is deficient in lime a good sprinkling of chalk or mortar rubble should be added. In renovating the borders take out a trench half way round the tree, and 3 feet from the main stem. Gradually remove the old soil with a fork, working towards the tree and taking care not to damage the fibrous roots. Whilst the latter are exposed they should be syringed occasionally or covered with damp mats. Afterwards, fill in the trench evenly and firmly, laying out the roots and fibres laterally towards the surface. Give one good watering to settle the soil, syringe the trees twice daily, and shade them lightly in bright weather until they commence to make new roots.

Young Plum Trees.—It frequently happens that young Plum trees grow too strongly after planting as to need root-pruning. The tree should be lifted and replanted, or a trench may be taken out half-way around the stem and roots cut which are growing downwards or outward.

Planting Plum Trees.—Where it is the intention to plant new trees no time should be lost in deciding a selection of suitable varieties and in placing the order to the nursery. Plums need a warm sunny site under glass, and where a choice of walls is available the walls should be furnished with standard, half-standard, or dwarf trees. Cordons may be trained up the rafters, and dwarf, fan-trained trees on the back wall. With judicious treatment the trees need to bear very heavy crops of fruit, far superior to those grown outside. The following varieties are suitable for growing under glass: Coe's Golden Drop, Jefferson, Kirke's, Dennistan's Superb, Early Transparent Gage, Green Gage, Reine Claude de Bavay, and Monarch. Culinary varieties include The Czar, Belgian Purple, Victoria, Early Prolific (Rivers'), Diamond, and Pond's Seedling. When planting use similar compost to that advised for Plums in borders.

THE FLOWER GARDEN.

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

Double Dwarf Sweet William.—This very old crimson variety, which is a mule, forms very large masses in soil that agrees with it, while in that which it does not appreciate it is important to renew the stock regularly at yearly intervals. This plant, like many Pinks, roots along the stems, and should be propagated somewhat similarly to Pinks. I have sometimes kept up the vigour of decadent plants by means of a surface dressing of light soil spread all over the clumps about this time of year, and into which new roots find their way. On the whole, however, annual propagation is preferable, resulting, as it does, in stronger and more florriferous plants, old plants never being quite so brilliant as these.

Hyacinths. I have grown Hyacinths for many years, planted thickly, for the production of loose spikes for cutting, and on that account did not regard quality at all. Bulbs, however, which have been allowed plenty of space, demonstrate the possibility of, even in Scotland, producing fairly good spikes. Justice in the eighteenth century, advised the growing of Hyacinths in Scotland, but the type of that period would not be looked at now. I am trying some of the bulbs in pots. I advise very finely pulverised soil for what bulbs one may have, and surface-dressing them with superphosphate in the spring. Only such sorts as King of the Blues, L'Innocence (which does splendidly), Ida, Robert Steiger, and similar varieties should be attempted. I would not throw away off-sets, but plant those apart to make flowering specimens.

Delphinium.—Seedling Delphiniums are very useful at this time of year, as they give a tone to borders which no other plant provides. The present time is suitable for sowing seeds saved now or recently. A large number of seedlings may be raised in an ordinary box, if placed in a greenhouse or pit to induce rapid germination. When well through the soil the seedlings should be pricked out in other boxes filled with a light compost and afforded space sufficient for their development until they are potted into 4 inch pots before winter sets in. A compost of two parts turfy loam to one part leaf-mould, with a little sand added, is suitable, and if the plants are grown in a temperature of 45° to 50° a shift into 6 inch pots in January will carry them on until fit to be planted where they are to be flowered. Such plants should give splendid spikes, very much superior to those raised from seed sown in January or February of the year of flowering. I rather prefer the lighter shades of blue, which go better than dark blue with the other autumn flowers, but all are beautiful and none need be rejected.

EDITORIAL NOTICE.

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

Special Notice to Correspondents.—*The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.*

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

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 57.09.

ACTUAL TEMPERATURE:—

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, *Thursday*, September 12, 10 a.m.: Bar. 29.5; temp. 58° Weather—Dull.

SALES FOR THE ENSUING WEEK.

TUESDAY—
Sale of Palms, Ferns, Greenhouses, Piping, &c., at the Nursery, Bury Street, Lower Edmonton, at 12.45, by Protheroe & Morris.

WEDNESDAY—
Sale of Bulbs at 67 and 68, Cheapside, E.C., at 1 o'clock, by Protheroe & Morris

FRIDAY—
Sale of Orchids at 67 and 68, Cheapside, E.C., at 1 o'clock, by Protheroe & Morris.

Progress in Dahlias.

It is remarkable that the great family of the Compositae furnishes the chief glories of the flower garden in late summer, autumn, and winter. Already the beds and borders are gay with Dahlias, which will soon be followed by the innumerable types of perennial Asters, better known in gardens as Michaelmas Daisies. Lastly, there is the wealth of Chrysanthemums which nowadays extend the season of flowers to Christmas and the New Year.

The Dahlia being the tenderest of these plants, it is only fitting that it should open the season, and the exhibition of the National Dahlia Society in the Drill Hall, Westminster, on Tuesday last, showed that, although fewer persons are now growing and exhibiting flowers, many still continue to take a great interest in Dahlias, and that progress in the raising of new types and varieties is being well maintained.

Some critics of the flower contend that the Dahlia is too formal and stiff in appearance to make a wide appeal. This may certainly be true of the older types, such as the show and fancy varieties, but this cannot be advanced in the case of the beautiful single varieties; nor is it true of the newest type of "Star Dahlia," for which we are indebted to the firm of Messrs. J. Cheal and Sons. The Collerette, Paeony-flowered, and miniature Cactus Dahlias are all of comparatively recent origin, and in all these we have material of great decorative value for gardens. The larger-flowered varieties, and those generally known as decorative Dahlias, are especially suitable for furnishing large beds and for the foreground of the shrubbery border; in this latter position their imposing stature and brilliant flower-heads show to particular advantage.

The Cactus forms include many which are suitable for massing out-of-doors, but there has been a tendency in late years for raisers to pay more attention to varieties in this section suitable for exhibition than to those adapted to garden decoration, and many of the choicest novelties have grave defects, such as short flower-stems or sparse blooming, with the result that in gardens the foliage is more conspicuous than the blooms. Some of this section are superb border plants, and raisers should endeavour to obtain a greater selection of Cactus varieties of the best garden type. The new rule of the National Dahlia Society requiring all varieties submitted to the Floral Committee for certificates to be exhibited without artificial support was made for the express purpose of eliminating those with short or weak stems, and which do not hold the blooms sufficiently erect to allow the full beauty of the flower to be appreciated.

Varieties of the Star type are excellent for furnishing cut blooms; the stems are exceptionally long, the heads stand up well, and the growth of the foliage is not so dense as in many of the older varieties. Perhaps the best in this section is White Star, which was illustrated in *Gard. Chron.*, September 26, 1914, fig. 89.

One of the latest varieties, Southern Star, which received the Royal Horticultural Society's Award of Merit on August 27 last, is illustrated in fig. 38. The Star Dahlia originated as a seedling from a single variety, crossed, most probably, with a Paeony-flowered variety. The first one distributed by the raisers was Crawley Star, and from this was obtained the beautiful white form referred to above. Yellow Star and Lowfield Star, the latter with pink florets marked with darker colour at the bases, are two others of high merit.

The claims of the Pompon varieties as decorative garden plants must not be overlooked, for many of these elegantly shaped Dahlias possess long flower-stalks and a compact habit of growth. They are extremely useful for floral decorations, for cut blooms remain fresh for a long period. The Collerette forms are even more valuable in the garden, as their bright and shapely blooms are freely borne and carried well above the foliage. Some of the varieties of this type, such as Canopus, illustrated in fig. 39, are very regular in outline, and their symmetry of form would appeal to the most critical florist.

Sir Albert Rollit.—Sir ALBERT K. ROLLIT, V.M.H., has been re-elected chairman of the Horticultural Education Committee of the Senate of the University of London.

Phosphatic Fertilisers.—Owing to the impossibility of meeting all demands for basic slag, it is necessary that growers should make greater use of superphosphate, the supplies of which are relatively satisfactory. As compared with basic slag, half the quantity of superphosphate may be expected to give equally good results on cereal crops, and for cereals and spring crops generally, superphosphate is usually to be preferred on account of its greater solubility. Further, superphosphate may safely be mixed with sulphate of ammonia, thus economising time and labour. Economy should be exercised in the use of basic slag, in order that a moderate dressing may be available for as large an area as possible. For autumn-sown crops the use of basic slag might, broadly speaking, be restricted to the heavier clay soils, where both phosphates and lime are deficient, and the dressing should not usually exceed 4 cwt. per acre. Even where superphosphate cannot be applied as an autumn dressing growers should order as much as possible of their supplies for delivery during the autumn.

Agriculture in 1918.—The returns of acreage and live stock collected on June 4 last show that the total arable area in England and Wales this year is 12,398,730 acres, representing an increase of 1,152,620 acres, or 10 per cent. over the arable area of 1917. This is the largest area returned for the past twenty years. The area under permanent grass is 14,588,900 acres, a decrease of 1,246,470 acres on the year. The total area under crops and grass thus amounts to 26,987,630 acres, as compared with 27,081,480 acres in 1917. The greater part of the ploughed grass land has been placed under Wheat and Oats. The increase in the area under Wheat is 638,260 acres, or 33 per cent., and the total now under this crop amounts to 2,556,740 acres, which is the largest since 1884. Oats this year cover 2,778,980 acres, the largest on record, and 520,070 acres (23 per cent.) more than last year. The other Corn and Pulse crops also show increases; Barley by 42,000 acres, Rye by 45,000 acres, Beans by 40,000 acres, and Peas by 19,000 acres. To these cereal areas have to be added 141,580 acres under Mixed Corn now for the first time separately distinguished, the returns of such crops having previously been divided between the various Corn crops, according to the kinds grown. The total area under Corn and Pulse (Wheat, Barley, Oats, Rye, Beans, Peas and Mixed Corn) this year thus amounts to 7,481,000 acres as compared with 6,035,000 acres in 1917; an increase of 1,446,000 acres, or 24 per cent., and the largest area under Corn since 1879. Potatos have been increased by 125,850 acres, or 25 per cent., and the total area (633,840 acres) is much the largest on record. Most other crops naturally show a decline, especially Turnips and Swedes, which are reduced by 6 per cent., and are the lowest on record; but the Mangold area is slightly greater, and Flax this year covers 18,400 acres—more than seven times the area of last year, and the largest but two (in 1869 and 1870) for the past fifty years. The area under Clovers, Sainfoin, and Rotation Grasses has been reduced by 400,000 acres (16 per cent.), and the total (2,095,000 acres) is the smallest on record. Of this 1,446,500 acres were reserved for hay, which is the smallest area ever returned, and represents a decline of 235,000 acres on the year. Of the permanent grass 4,300,000 acres (nearly half a million less than last year) were reserved for hay. The total hay area thus amounts to not quite 5,750,000 acres, or 730,000 less than in 1917, and the smallest since 1885.

Glasgow and South-Western Railway Station Gardens.—The prizes for the best-kept station gardens on the system of the Glasgow and South-Western Railway Company have now been awarded by the judges, who visited the stations on three occasions during the season. They are divided into five classes, the premiums in these being respectively £5, £4, £3, £2 and £1. In the first class are the following: Mr W. R. BECKETT, Drybridge; Mr. JAS. HOUSTON, Closeburn; Mr. D. KELLY, Holywood; Mr. WM. NICHOLSON, Maxwelltown; Mr. JOHN INGLIS, Dalmellington; Mr. W. PATERSON, Glenside; Mr. THOS. COYLE, Dalbeattie; Mr. C. AULD, Alloway; Mr. R. MUIR, Carronbridge; Mr. JAS. DUNLOP, Cunninghamhead; Mr. ALEX. LESLIE, Paisley West; and Mr. JOHN RAE, Dumfries House.

HOME CORRESPONDENCE.

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

Corn Production (Amendment) Act, 1918.—As considerable confusion still appears to exist as to the effect of the above Act, I feel that the following remarks may be of some assistance to your readers who are interested in the question. Part IV. of the Corn Production Act, 1917, dealing with the enforced cultivation of land, should have come into force on August 21, 1918, and under that Part certain rights of appeal and compensation were granted. The Government, however, wished, until the conclusion of the war, to exercise the powers which they claim under the Defence of the Realm Act Regulations, and introduced what is now the above Act, granting them the continued use of such powers. The Bill as introduced contained no rights of appeal and no statutory right to compensation, and consequently it was subjected to considerable opposition. The Government, admitting the reasonableness of the criticisms advanced, accepted certain Amendments, and the present position is as follows: (1) If a notice is served ordering a change in the mode of cultivation or in the use of the land (*e.g.*, the ploughing-up of pasture), or determining the tenancy of any land, although such notice is issued under the Defence of the Realm Act the farmer will have a right of appeal to an independent arbitrator. There is, however, this qualification, that if the notice is served "solely for the purpose of securing that the land shall be cultivated according to the rules of good husbandry," no appeal is allowed, unless the notice is one determining a tenancy; (2) if the Board of Agriculture or their agents decide to enter into possession without in fact determining the tenancy, notice will be served and a similar right of appeal granted before such possession is taken. Should, however, the land be required for gardens or allotments, or possession is taken solely to secure good cultivation, no notice will be served and no appeal will be allowed; (3) where an appeal is given the owner and occupier have the same rights of appeal, and notices will be served on both. Where possession is sufficient cause to the arbitrator, Orders issued by the Board of Agriculture or their agents, compensation can be claimed and, in default of agreement will be assessed by an independent arbitrator instead of by the Defence of the Realm Losses Commission, and the farmer can now claim this compensation as of legal right instead of as heretofore merely as a matter of grace. These concessions are of very great importance to all those interested in agriculture, and should do much to abolish any friction which might exist between agriculturists and those responsible for the issuing of compulsory Orders, with the result that the food supply, which is vital to the interests of the country, should be materially increased. The Land Union hopes at an early date to issue the text of the Act together with a full explanatory note of the present position.—*Desborough, Chairman, The Land Union.*

Old Gardening Books (see pp. 57, 71). I agree with Mr. Roberts' comment that all lists of gardening books fall short of what is wanted. The bibliographical list in the Hon. Evelyn Cecil's *History of Gardening in England* ought certainly to have been brought closer up to date. For all practical purposes it ends almost at the same point as Johnson's. And yet a large number of works on horticulture and allied subjects have appeared since the last date mentioned by these two authors. Although old seedsmen's catalogues are a part of gardening literature, it does not seem to be desirable that they should figure in a bibliography. They are a separate and distinct class of literature, and it would be unwise to encumber any horticultural bibliography with them. In all my contributions on floricultural bibliography I have generally excluded anything purely in the nature of a trade catalogue. There are some cases in which exception might be made, but they are few. John Webb's catalogue of seeds and roots may be one. I do not know it, but Robert Edmeade's catalogue, published in 1776, is certainly more than it might be supposed to be. It is entitled "The Gentleman and Lady's Gardener, containing the modern method of cultivating the kitchen garden, flower garden, etc. . . . with a general catalogue of seeds, plants, and roots . . . to which is added a catalogue of bulbous-rooted flowers and their prices," etc. There are 156 pages. The Latin names are given to each plant according to the Linnean system of classification. There is a monthly calendar of operations. The priced lists and names are of considerable interest, and the work, instead of being a mere trade catalogue, is a cultural guide or *vade mecum*, and should be placed in a higher literary rank than many of the more modern publications of its kind.—*W. H. P.*

——There is an old book called "*The Complete Gardiner; or, Directions for Cultivating and Right Ordering of Fruit Gardens and Kitchen Gardens*." By Monsieur De la Quintinye. Now commendably abridged and made of more use, with very considerable improvements by George London and Henry Wise. 4th Edition. Corrected, 1704. With a number of plates, plans, etc. Can any reader inform me as to the probable value of the book.—*H. J. Shelley, Desborough Lodge, High Wycombe.*

Collecting Herbs. In many old established gardens large quantities of herbs are grown which are not required for use and are ultimately wasted; it should be possible to obtain a beverage from those which could be used and refreshing, and quite as palatable as some of the tea which is now on the market; we have also large quantities of native herbs, such as Marjoram, Thyme, Wood Sage, and others; if these were included there would be a large supply of material which would only need collecting and drying. Can any reader of the *Gardeners' Chronicle* furnish me with a recipe for utilising these herbs, for if less tea is imported more shipping will be available for other purposes.—*W. H. Divers, Westbourn, Hook, near Surbiton.*

SOCIETIES.

ROYAL HORTICULTURAL.

SEPTEMBER 10.—It was a pleasure to find such a large attendance at the meeting held on Tuesday last, and to see the Drill Hall filled with exhibits. Dahlias were prominent flowers even in the classes provided by the National Dahlia Society, and Roses were extensively shown in the classes provided by the National Rose Society. Orchids were another fine feature, and vegetables were well shown.

The Floral Committee granted one First-class Certificate and eight medals. The Fruit and Vegetable Committee awarded two Cultural Commendations and three medals. The Orchid Committee's awards consisted of one First-class Certificate, one Award of Merit, and two medals. The Joint Dahlia Committee selected nine Dahlias for award.

FIG. 30.—THE HON. PARKMAN'S HAYWARDS VARIETY (see p. 112).

Floral Committee.

Present: Messrs. H. B. May (in the chair), John Green, Sydney Morris, R. W. Wallace, A. G. Jackman, J. F. McLeod, G. Reuthe, John Heal, W. Cuthbertson, C. R. Fielder, Wm. H. Morton, George Paul, Arthur Turner, H. J. Jones, J. W. Moorman, Jas. Hudson, Chas. E. Pearson, E. F. Hazelton, W. P. Thomson, E. H. Jenkins and Herbert Cowley.

FIRST-CLASS CERTIFICATE.

Berberis concinna. This is a very handsome Barberry that makes a fair-sized bush of graceful habit. The spiny leaves have a white under surface, and this is most conspicuous on the leaves of the new growths. The berries are one-third of an inch long, generally in pairs, and they are slightly elongated oval in shape, coral-red when ripe, and yellowish-green before ripening. The fruits are freely produced, and as they are pendulous the decorative value of the sprays is very great. Shown by Messrs. R. WALLACE AND CO.

INTERESTING PLANTS.

Large fruiting sprays of Rosa Moyesii were very attractive in a group of autumn fruiting shrubs staged by Messrs. R. WALLACE AND CO. In Mr. REUTHE'S exhibit a pan of Schizocodon ilicifolius was a pleasing feature, the glistening bronze-green leaves attracting much attention. Mr. W. MILLER had a bold stand of Tritoma nobilis among other hardy flowers, and in a group of Delphiniums Mr. W. WELLS, junr., made a fine feature of the deep violet-blue variety named Cossack. Mr. L. R. RUSSELL'S stove plants were greatly admired, especially the Bertolonias under large bell glasses. Messrs. B. LADHAMS' hardy herbaceous Lobelias had many admirers, but their blooms of Gaillardia Rownham's Queen attracted even more attention; these are pale yellow with crimson centres.

MEDALS AWARDED.

Silver-gilt Banksian.—To Mr. L. R. RUSSELL, for stove plants, and to Mr. G. REUTHE for hardy plants. *Silver Flora.*—To Mr. G. W. MILLER, for hardy flowers. *Silver Banksian.*—To Mr. W. WELLS, junr., for Delphiniums. *Bronze Flora.*—To Messrs. J. CHEAL AND SONS, for coloured and berried shrubs, and to Messrs. H. B. MAY AND SONS, for Ferns and Veronicas. *Bronze Banksian.*—To Messrs. B. LADHAMS, LTD., for hardy flowers, and to Messrs. R. WALLACE AND CO., for fruiting sprays of hardy shrubs.

Orchid Committee.

Present: Sir Jeremiah Colman, Bart. (in the chair), Sir Harry J. Veitch, Messrs. Jas. O'Brien (hon. secretary), Frederick J. Hanbury, William Bolton, W. H. White, J. Charlesworth, Chas. H. Curtis, T. Armstrong, and Fred Sander.

AWARDS OF MERIT.

FIRST-CLASS CERTIFICATE.

Laelio-Cattleya President Wilson (*L.-C. Thyone* × *C. Dowiana aurea*), from Messrs. ARMSTRONG AND BROWN, Orchidhurst, Tunbridge Wells.—A magnificent hybrid, and by far the best of its class, with the fine form of C. Dowiana aurea and its firm substance intensified. The broad sepals and petals are bright yellow, the wavy-edged petals being finely displayed; the large lip, which in its colouring much resembles C. Dowiana Rosita, is carmine-crimson with rich orange-coloured lines extending from the base to the front, where they are of a lighter tint.

AWARD OF MERIT.

Brasso Cattleya Olympus Langley variety (*C. Hardyana* × *B. C. Madame Chas. Maron*), from Messrs. FLORY AND BLACK, Orchid Nursery, Slough.—A fine addition to a favourite class, and distinguished by the broad expansion of its fringed labellum and an unusually large, clear yellow disc to the lip. The colour is white tinged with lilac, the lip being of the darker shade.

GROUPS.

Messrs. STUART LOW AND CO., Jarvisbrook, Sussex, were awarded a Silver-gilt Flora Medal for an extensive and well-arranged group in which all the plants were excellently well grown and profusely flowered. A selection of Laelio-Cattleyas and Catt'eyas included the new C. Iris Buttercup, with bright yellow sepals and petals and claret-coloured lip with broad, yellow margin, and C. Gaskelliana My Lady, a pretty white form with mauve blotch on the lip, the spike bearing five flowers. Fine plants of Vanda coerulea, the rose and white Oncidium incurvum, and the yellow O. varicosum were arranged with dwarfer Orchids.

Messrs. CHARLESWORTH AND CO., Haywards Heath, were awarded a Silver Flora Medal for a good group in which their home-raised Miltonias were effective, and included two fine new forms of M. vexillaria, viz. Marshal Foch, with large, light rose-coloured flowers, the labellums of which were nearly 4 inches across, and Dulcies, coloured bright magenta-rose with a very distinct mark on the lip. A good selection of Odontoglossums and Laelio-Cattleyas, including a finely-coloured form of L.-C. Aquam, were included in this exhibit.

Messrs. J. AND A. MCBEAN, Cooksbridge, staged a small group in which were a good form of Cattleya Hardyana alba, Vanda Sanderiana, Cattleya Venus, Brasso-Cattleya Nodina, and the now rare Rodriguezia secunda, with four sprays of rose-pink flowers.

Messrs. ARMSTRONG AND BROWN showed Cattleya Ella Orchidhurst variety (bicolor × Warscewiczii), a fine flower of a light salmon shade tinged with yellow, and broadly expanded violet-crimson lip.

Messrs. FLORY AND BLACK showed the white-petalled Cattleya Warscewiczii Fran M. Beyrodt in excellent form.

Fruit and Vegetable Committee.

Present: Messrs. Joseph Cheal (in the chair), Owen Thomas, W. Bates, Edwin Beckett, E. A. Bunyard, P. W. Roach, W. H. Divers, George P. Berry, A. R. Allan, J. C. Allgrove, Fred G. Treseder, and Sir Albert Rollit.

This Committee was occupied with business for a longer time than usual. From the R.H.S. gardens a small collection of Haricot Beans was brought, and cooked examples of each variety were tasted. We understand that a report upon the cropping and culinary qualities of these Beans will be published in due course.

No award was granted to a novelty, but Messrs. BARR AND SONS gained a Cultural Commendation for eighteen finely grown and heavily fruited plants of Tomato Barr's Scarlet Beauty. This is a highly coloured form bearing even-sized, smooth fruits in clusters of six to ten each. The plants carried an average of six clusters each. (Silver-gilt Banksian Medal.)

Messrs. SUTTON AND SONS were awarded a Silver-gilt Banksian Medal for a collection of vegetables. Potatos, Spinach and Peas planted or sown on July 15 were exceptionally good, and proved very interesting. Runner Beans were also a great attraction, some pods of Prizewinner measuring 16 inches in length.

Several varieties of Figs grown and ripened out-of-doors at St. Anne's Hill, Chertsey, secured a Cultural Commendation and a Silver Banksian Medal for Sir ALBERT ROLLIT.

A new and attractive Apple obtained by crossing Cellini Pippin with Gravenstein was exhibited by Messrs. H. CANNELL AND SONS under the name of James Lawson.

NEW DAHLIAS.

The Joint Floral Committee, composed of members of the National Dahlia Society and of the Royal Horticultural Society's Floral Committee, sat at 10.30 a.m. to judge the new Dahlias submitted.

Present: Messrs. H. B. May (in the chair), D. B. Crane, E. H. Jenkins, H. J. Jones, Arthur Turner, Chas. H. Curtis, Joseph Cheal, John Green, J. A. Jarratt and J. F. McLeod.

The following Dahlias gained the Royal Horticultural Society's Award of Merit and also the National Dahlia Society's First-class Certificate:—

Defiance.—A handsome decorative variety, of large size, but in no degree heavy or ungainly. The colour is pink with a golden flush over the centre of the flower, which is carried on a long stiff stem.

Our Annie.—A rather small decorative Dahlia with two rows of florets, and a very useful variety for floral decorations, as the blooms are about 3½ inches across. The florets are pink, a lovely shade, with golden bases and golden shading running into the pink. The stems are dark, long, and stiff. These two varieties were shown by Messrs. J. BURRELL AND CO.

Sincerity.—A large white, decorative variety, very double, but with pointed segments. The heavy blooms are carried on stout stems, and they should be very useful for the making of wreaths and other large floral designs.

Bullfinch.—A large and finely formed Collerette Dahlia with broad, rounded segments of a clear, rich scarlet shade. The neat collar segments are yellow. The flowers are very attractive, and borne erect on stiff stems. These two varieties were shown by Messrs. J. STREDWICK AND SON.

Rising Star.—Although this has not the elegance of earlier members of the "constellation," it is a most attractive variety, as the colour is deep, velvety vermilion, with gold tips and lines. The blooms have two rows of segments, and, as in the case of other "stars," the stems are stiff and wiry. Shown by Messrs. J. CHEAL AND SONS.

Lady W. Thomas.—A medium-sized Collerette variety of good form. The ground colour is blush, but the centre of each segment is crimson, and there are rosy markings between this colour and the margin. The whitish collar is evenly developed.

Clematis.—A striking single variety eminently suitable for garden and floral decoration, but not of sufficiently rounded form for show purposes. The slender stems are long and wiry. The colour is clear rich mauve, with a narrow zone of yellow round the eye. The variety is well named. This and the foregoing variety were shown by Messrs. J. TRESEDER AND SON, Cardiff.

Oriole.—A very distinct decorative variety that might be classed as a semi-double Cactus Dahlia. The flowers have three rows of segments, which are broad at the base and pointed at the apex. The colour is rich orange-scarlet. Shown by Mr. J. T. WEST.

Péronne.—A bold and effective Collerette variety with full-sized, rounded flowers of a rich, soft scarlet colour, with a well-developed yellow collar. Stems long and stiff. We believe this variety was raised by Messrs. W. Treseder and Sons, of Cardiff. Shown by Mr. J. A. JARRATT, Anerley.

THE NATIONAL DAHLIA SOCIETY'S SHOW.

Messrs. W. TRESEDER AND SONS, Cardiff, were the only exhibitors of 24 Show and 12 Fancy varieties, and were awarded the 1st prize in both classes. In the former class the best varieties were Nugget, R. T. Rawlings, Penelope, Perfection, Gracchus, and David Johnson. The Fancy blooms were not quite so good; the best were Rev. J. B. M. Camm, Nansen, and Comte de le Saux. Messrs. TRESEDER AND SONS won the 1st prize for 6 blooms of one variety with a fresh and very evenly developed bloom of Shottisham Hero; 2nd, Mr. S. COOPER, Chippenham.

In the open classes for Cactus Dahlias there were no exhibits of 18 varieties or of 48 blooms, but Messrs. TRESEDER AND SONS were awarded the 1st prize in the class for 24 blooms with such sorts as Border King, Gigantic, and Dorothy Hawes. With excellent blooms of Valhalla, Mr. S. T. WHITE, Eastleigh, Hants, won the 1st prize for 6 blooms of one variety; 2nd, Mr. PRYOR, Hitchin.

Messrs. J. CHEAL AND SONS, Crawley, showed alone in the class for 12 vases of garden Cactus Dahlias; the exhibit was worthy of the 1st prize, which was awarded. The vases of Mary Purrier, Richard Box and Cygnet were very decorative. Only one of the classes for Pompon Dahlias was represented by an exhibit; the exhibitor was Mr. D. B. CRANE, Highgate, and he was awarded the 1st prize for a charming set of such varieties as Annie, Doncaster, Little Beeswing, Bacchus, and Little Gem.

Showing almost perfect vases of such sorts as Mikado, Hilda, Columbine, and Winona, Messrs. CHEAL AND SONS were awarded the 1st prize for 24 vases of Single Dahlias, and Messrs. TRESEDER were similarly placed for a graceful shower bouquet of Mrs. Irwin Dahlias.

Competition was rather disappointing in the classes for the popular and highly decorative Paeony flowered and decorative Dahlias. Mr. J. A. JARRETT, Anerley, won the prize for 6 varieties with appropriate foliage, showing such sorts as Meyerbeer, Mrs. J. A. Jarrett, and Old Gold; 2nd, Messrs. CHEAL AND SONS. Mr. JARRETT was also placed first for 6 vases of decorative varieties, with Mr. TOFIELD, Southampton, who was awarded 1st prize for a beautiful vase of Paeony-flowered varieties, second.

AMATEURS' CLASSES.

In this division the competition was better, and several amateurs whose ambition justified their entry into the open classes competed.

Of the Show and Fancy classes that for 24 blooms was not competed in; Mr. COOPER was placed 1st and Mr. J. WAITE, Chippenham, 2nd, for 12 blooms, and Mrs. S. MAY, West Grinstead, was 1st for 6 blooms.

Mr. C. LUCKIN, Pulborough, won 1st prizes for (a) 6 vases of garden Cactus, (b) 12 blooms of Cactus, (c) 12 blooms in four varieties, and (d) 6 varieties of Single Dahlias, and was 2nd for 9 vases of Cactus varieties. Mr. G. PRYOR, Hitchin, won the Dean Gold Medal with a good collection of 9 vases of Cactus Dahlias, which included Margaret Phillips, H. H. Thomas, and Julian, in splendid condition, and he was also placed 1st for 6 blooms of Cactus Dahlias.

Mr. A. BROWN, Seagrave, was placed 1st, and Mr. J. WAITE 2nd, in the class for 6 vases of Pompons. Mr. D. B CRANE excelled in the class for 6 12 vases of Single and 6 3 vases of Star Dahlias, while Mr. JARRETT took 1st prizes in the classes for 6 4 vases of Incurved and (b) 6 of Paeony-flowered Dahlias, and Mr. H BROWN, Luton, for 6 vases of Collerette Dahlias.

Messrs. J STREDWICK AND SON won the Gold and Silver Medals which they offered for the best seedling exhibition Cactus Dahlias on a wire frame, with fine examples of Pennant

CORY CUP.

Messrs. CARTER PAGE AND CO. were the only entrants in the annual competition for the Cory Challenge Cup, which is offered for the best display of garden Dahlias. The decision lies with the Council of the R.H.S., and in the absence of competition the cup was not awarded. All sections of the flower were represented, and the individual blooms were the acme of freshness and high quality, and arranged with great skill.

NATIONAL ROSE SOCIETY'S CLASSES

THE autumn show of this society, held in conjunction with the R.H.S. meeting, assisted materially in the general success of the fixture. The various trade displays were admirable.

SEEDLING ROSES.

This section was decidedly weak, and for some reason not readily apparent the three novelties failed to reach the high standard that is usually associated with the shows of this society. A Certificate of Merit was awarded to Capt. Fane Bold, a dark crimson H.P. Rose, shown by Messrs. ALEX. DICKSON AND SONS. As seen at the hall it was a good Rose, rather weak in the stem, though of good form and size; the bloom was rich and very effective of mildew, but the blooms possess the indispensable quality of fragrance, and this may have induced the award. Claire Jacquier, of Messrs. A. Haworth, the other two sorts, were due badly in poor condition, but they were splendidly shown a month ago.

GROUPS OF ROSES.

These in search of good autumn flowering varieties could have spent time much more profitably in inspecting the magnificent trade displays than with the few seedlings above mentioned. In spite of many handicaps, half a dozen well-known firms set up admirable collections of fresh and fragrant Roses, often in such masses as to give an instant impression of great floriferousness.

Of the many sorts so abundantly shown, it was noticeable that those of yellow colour and shades, Constance, Mrs. Wemyss Quinn, Rayon d'Or, Lady Hillingdon, and the like "took the eye," though Ophelia was the "Rose of the show."

Mr. E. J. HICKS was awarded a Gold Medal for an outstanding exhibit, which included splendid vases of Red Letter Day, Princess Mary, Ophelia, Lady Hillingdon, Chas. E. Shea, Rayon d'Or, Florence H. Veitch, and the pale pink, semi-double Queen of the Belgians.

In the fine collection which won a Silver-gilt Medal for Messrs. ALEX. DICKSON AND SONS, we noted Clarice Goodacre, Lady Pirrie, K. of K., Mrs. Wemyss Quinn, and Alexander Emslie, rich crimson, as being worthy of special mention, while in the collection which won a similar high award for Messrs. E. CANT AND CO. the outstanding vases were of Constance, General McArthur, Ophelia, Irish Fireflame, Modesty, and Jessie.

Silver medals were awarded to the Rev. J. H. PEMBERTON, who had generous quantities of Pax, Moonlight, and Rayon d'Or; and to Messrs. B. R. CANT AND SONS, in whose collection Lady Hillingdon, Mdme. Ed. Herriot, Snow Queen, Muriel Dickson, and Mrs. Alfred Tate were excellent. A Bronze Medal was awarded to Mr. HARRY DREW for a smaller group.

DECORATIVE CLASSES.

In several classes medals were awarded for baskets, and the floral arrangements were all beautiful, and well worthy the awards.

Mr. E. J. HICKS was the only exhibitor of 3 baskets, and was awarded a Silver-gilt Medal for good blooms of Red Letter Day, Joanna Bridge, and Princess Mary. Mr. HICKS also was awarded a Silver Medal for a bowl of Isobel, a rose-tinted sport of fine size and much beauty.

A Silver-gilt and a Silver Medal were awarded to Mrs. COURTENEY PAGE for bowls of roses. Mrs. J. M. MCKAY and Mrs. OAKLEY FISHER received Silver-gilt Medals for displays of Roses, and the latter lady also won a Silver Medal for a bowl of Roses, while Mr. A. DE V. FRYER was rewarded with a Silver Medal for a charming decorative exhibit of Irish Elegance. Bronze Medals were won by the Rev. J. H. PEMBERTON and Mr. HY. DREW for the varieties PAX and Irish Elegance respectively.

VEGETABLE SHOW AT ST. ALBANS.

IN their 1915 Catalogue of Vegetable and Flower Seeds Messrs. Ryder and Son, Ltd., St. Albans, offered 20 prizes of £5 each for the best specimens of Runner Bean, Broad Bean, Haricot Bean, Long Beet, Round Beet, Cabbage, Carrot, Cauliflower, Cucumber, Celery, Leek, Onion, Parsnip, Pea, Salsafy, Sweet Corn, White Turnip, Yellow Turnip, Tomato, and Vegetable Marrow. Entries were restricted to one of each, though any number could be sent in, in any one class or any number of classes. There was no entrance fee, and no stimulation as to varieties or where the seed was purchased. Nearly 500 exhibits were staged on the 5th inst., and they were judged by Mr. Ed. Beckett and Mr. E. Molyneux. Exhibits were sent from all parts of the British Isles, and these on the whole, were of excellent quality. The exhibits of Onions filled one table, and the majority were fine, well-matured bulbs, the heaviest specimen weighing 3 lbs. 6oz., which is a credit to the grower. The Runner Beans were the finest Runner Beans we have ever seen, the pods being 18 inches long and perfect in shape. Many others were from 10 inches to 15 inches in length. Pods of Broad Beans containing seven or eight large Beans were arranged on a table next to Haricot Beans containing nine or ten Beans. Parsnips 2 feet to 3 feet long, one measured 3 feet 6 inches, and Carrots 2 feet or more in length were assembled in hundreds. Turnips and Beets were present in quantity, but the samples were very uneven and many were large and coarse. The winning roots however, and a fair proportion of the others were of good quality. Vegetable Marrows were of all sizes, some weighing from 25 lbs. to 35 lbs. each, but the monsters were disqualified as being only suitable for jam-making. The winner was a large, clean specimen, quite young, probably weighing 10 lbs. or more. Salsafy and Sweet Corn were represented by a comparatively large number of exhibits. Though the season was somewhat late a considerable number of Peas were exhibited, the pods containing ten or eleven Peas of perfect colour and shape. Tomatoes were not numerous, probably owing to the difficulty of sending ripe fruit by rail, but the quality of those exhibited was good, and it was not an easy matter to determine the best. Cucumbers resembled the Marrows in that half the specimens sent were too old, though a few were young and of good quality. Leeks and Celery were plentiful and of good size, as also were Cabbages and Cauliflowers, the latter being medium sized, very firm and white. The winning cabbage measured 2 feet across, and was well shaped, firm, and young.

The following is the list of prize-winners:—

Runner Bean: J. SELBY, Flock House, Taunton; Broad Bean: D. WILSON, 17, Croftbeat Terrace, Glashurn, Keighley; Haricot Beans: W. C. PAGRAM, 3, Redfern Cottages, New Road, Weybridge; Long Beet: J. DEVOY, 30 Dalrymple Street, Stranraer; Globe Beet: M. HOAD, 96, Albemarle Road, Willesborough, Ashford; Cabbage: A. PINNOCK, 42, Prospect Road, St. Albans; Carrot: J. MCRONALD, Station House, Philorth, Fraserburgh; Cauliflower: J. I. PINNOCK, 2, Albert Street, St. Albans; Celery: J. DARQUE, Plunderheath, Haydon Bridge; Cucumber: H. BOWLES, 27, Burleigh Road, Malden; Leek: W. CARTLEDGE, Garmondsway, Coxhoe; Parsnip: C. BATE, Post Office, Overton Bridge, Bridon; Salsafy: C. WEBSTER, The Rookery Gardens, Westcott, Dorking; Maize: W. H. THORNE, The Lodge, Dimcroft, Staines; White Turnip: T. AVERY, The Gardens, Gaddesden Place, Hemel Hempstead; Yellow Turnip: H. BOSLEY, 61, Fern Street, Boothtown Road, Halifax; Peas: W. B. CURTIS, Perranwell Station, Carnwell, Truro; H. WHEELER, Wenvoe, near Cardiff; Tomato: G. HACKER, Manor Cottages, Shirrell Heath; Vegetable Marrow: F. EATON, 16, Ladysmith Road, St. Albans.

H.M GRETNA FACTORY SHOW.

THE first annual flower show in connection with the Gretna Factory Horticultural Association was recently held in the Institute Hall, Gretna. There was an excellent competition, no fewer than 730 entries being made. Vegetables formed the principal feature of the exhibition, and these were of exceptionally fine quality as a whole, the Potatos being both numerous and of sterling quality.

The show was opened by Mr. J. C. Burnham, C.S.I., the superintendent of the factory, Mr. J. Harkness, Town Manager, occupying the chair. Mr. Burnham made an interesting speech, in which he give many encouraging details regarding the horticultural and agricultural efforts being made at the factory. The prize list is a long one, and we have only room to publish a few details of some of the leading classes. For the heaviest crop of Potatos grown on 20 roots in a continuous row Mr. C. BURLEY was placed 1st, with a crop of 74 lbs. 8 oz. of the variety Duchess of Cornwall. There were 42 competitors in this class. For the best aggregate of points in the vegetable section Mr D. MAXWELL was placed 1st, and he was also awarded the 1st prize for a collection of vegetables. A number of prizes were offered in the garden and allotment competition, in which Mr W. MCWHIR won the 1st prize for the best kept Ministry bungalow garden in the Gretna district, and Miss JOHNSTONE-DOUGLAS that for a similar garden in the Eastriggs district. For the best kept allotment in the Factory area Mr. JOHN ARNOTT, Eastriggs, was placed 1st.

CROPS AND STOCK ON THE HOME FARM.

RYE.

LAST week I referred to the value of Rye for sheep food. I have just threshed the crop from 11 acres of this cereal, and the yield is 400 sacks—quite a full crop considering that 8 sacks per acre is regarded as a maximum yield. Now that Rye is so much required by the miller for flour, it would seem that this cereal is almost as valuable a crop as Wheat to grow, especially on poor land. No other cereal crop succeeds so well under inferior culture and poor manuring as Rye does, but I need hardly say the crop responds well to liberal treatment. Nitrogenous manures should be applied carefully, as the straw is longer and more slender than in any other cereal, and with heavy manuring would be more liable to fall. Rye is usually sold at the same price and weight per bushel (56 lbs.) as Wheat.

Those who have poor land to deal with might do well to sow Rye in September, first spreading 3 cwt. of superphosphate per acre. Early sowing is most important, in order that the plants may obtain a thorough roothold before winter.

ROOTS.

In southern counties Turnips are very poor, owing to the ravages of the Turnip fly. The outlook for sheep food during the winter and spring is not encouraging to those with a breeding flock to provide for. Backward patches should be encouraged to grow more vigorously by the aid of sulphate of ammonia sown evenly

at the rate of ¾ cwt. per acre. Keep the horse-hoe at work between the rows to accelerate growth as much as possible.

Swedes are generally a good crop, that will prove most useful in March and April to the sheep farmer.

Mangolds have improved very much, but many plots had to be ploughed owing to the attacks of Turnip fly—a most unusual experience with Mangold.

Farmers with a poor prospect of roots for sheep will be well advised to sow more Rye, at the rate of 4 bushels per acre, Winter Barley, Vetches, and Trifolium, both early and late sorts. All such crops will be useful in the early spring months.

WINTER OATS.

This crop has this season been a success, giving yields with plenty of straw, which is an important item. The advantages of winter over spring sown Oats are many. First, they ripen a fortnight in advance of those of the other section, enabling harvest to be commenced earlier, thus easing the harvesting of Wheat and spring-sown Oats, which at times ripen with a rush, and, if not cut promptly, much of the Corn is "butted." When Oats for use run short before harvest, the earlier ripening winter Oats fill the gap; and, lastly, Charlock does not affect this crop, as it does all too often spring-sown Oats. September is the best month in which to sow winter Oats, at the rate of three bushels per acre. Choose a clean Wheat stubble, thoroughly burying the straw by the aid of the skim coulter affixed to the plough. The ground once ploughed, well harrowed, and the seed sown broadcast or drilled, is all the preparation required. Either the black or the grey variety is equally good. *E. Molyneux. Swanmore Farm, Bishop's Waltham.*

TRADE NOTES.

FUEL RATIONING FOR MARKET GARDENS.

WHERE adequate supplies of coal for agricultural purposes cannot be obtained through the ordinary trade channels, application should be made immediately to the County Agricultural Executive Committee. The Food Production Department has made arrangements with the Controller of Coal Mines which it is hoped will ensure such supplies that are strictly necessary on the farms during the coming winter and spring. "Agricultural purposes" include steam ploughing, threshing, pumping, "and other direct farm uses," the work of blacksmiths engaged in repairing and making agricultural implements and shoeing farm horses. Work on market gardens and nurseries also comes within the term, but whereas it is hoped to supply the farmer with his full quota of fuel, the allowance to market gardens and nurseries has been cut down by about 20 per cent. The County Committees will not entertain any application unless an effort has been made to obtain coal from the usual coal merchant or factor and has failed.

ANSWERS TO CORRESPONDENTS.

ASPARAGUS PLUMOSUS NANUS: *J. P. and S.* Sow the seeds, as soon as they are ripe, in pans or beds of light soil in a house having a temperature of 70°. As soon as the seedlings are large enough to be handled easily place them in small pots, in a compost of sandy loam, old manure and leaf mould. If you require pot plants, place several seedlings together in the small pots and eventually place each potful in a 5-inch or 6-inch pot. A lower temperature will suffice when the plants are thoroughly established. If the feathery growths are needed for floral decorations set out the best individual plants in a well-drained bed of soil. In either case the plants will receive great benefit from frequent applications of diluted liquid manure when well rooted and commencing to grow freely.

BOOK: *T. W. B.* The best book on Conifers is *Veitch's Manual of Coniferæ*, but we believe the work is out of print, and can only be obtained from the second-hand booksellers.

CANTELOUP MELONS: *Melon.* The plants have either had too much or too little water, or they may have suffered from delay in planting. Canteloup and other Melons succeed best in heated pits, and should be grown in a temperature not lower than 65° at night, rising to 80° during the day, with plenty of moisture in the atmosphere and at the roots until the fruits begin to ripen.

GARDENING DICTIONARY: *H. G. H.* Nicholson's *Dictionary of Gardening* is out of print, but second-hand copies may be obtained occasionally through second-hand booksellers. It is probably the best work of its kind for a British gardener. The new edition of the *Standard Cyclopædia of Horticulture*, by Prof. L. H. Bailey, is an American work in six large quarto volumes, obtainable from Messrs. Macmillan and Co. A smaller and very useful book is the latest edition of Johnson's *Gardeners' Dictionary.*

GRAPES FAILING TO COLOUR: *Constant Reader.* As the roots of the vines are outside, moisture from watering plants in the house would not be detrimental to the colouring of the Grapes, provided sufficient ventilation was given. There are many circumstances which contribute to the lack of colouring—shanking, i.e., the withering of the berry-stems, is one of them, and this may be the result of insufficient nourishment, heavy cropping, mutilation of the roots, or the removal of a large quantity of leaves during the growing season. Shanked berries never become sweet. The early part of the summer was very dry, and vine borders needed an abundance of water, especially where the soil is light and the situation fully exposed to sunshine. If the border is cropped, the necessity for watering the vines would be much greater. When other plants are grown on a vine border they should only be surface-rooting subjects, not gross feeders like the members of the Brassica family, and no digging should be done during or immediately before the growing season of the vines. When the feeding roots of vines are 3 feet or more below the surface they cannot obtain sufficient air in a close soil, and none of the growths above ground will be perfectly developed. In bad cases it is advisable to raise the roots carefully in the autumn and plant them in a little fresh soil.

GRAPES RIPENING: *M.* Your Grapes should finish their ripening without further fire-heat, provided the winery is carefully ventilated and a little air admitted through the top and front ventilators at night. March 1 would be a good time to close the winery, as then artificial heat need not be provided except in very wet, cold weather. All sub-laterals should be pinched out and the house kept as cool as possible after the Grapes are cut.

GREASE BANDING FRUIT TREES: *L. D.* You will find a reference to the grease-banding of fruit trees on p. 101 of the last issue. As a preventive moisture grease-banding is extremely useful, inasmuch as thousands of wingless moths may be caught on the greased bands in a small orchard. As the trapped moths cannot lay their eggs on the branches of the trees it is obvious that subsequent attacks of caterpillars will be reduced to a minimum. Both the bands and suitable grease may be purchased from horticultural sundriesmen and seedsmen. The bands should be grease-proof and sufficiently wide to permit of their being tied at top and bottom; the ties must be sufficiently tight to prevent the moths from crawling underneath the bands. The grease should not come in contact with the stem of the tree. Place the bands at a convenient height up the stems of the trees in order that they may be re-greased rapidly as occasion requires.

HEDGING-HOOK: *C. C. B.* You will probably obtain the particulars required on application to Messrs. W. Wood and Sons, North British Wharf, Wood Green, London, N.

LAYING OUT A ROCK GARDEN: *F. R.* There is no book which will give you any definite instructions suitable for your particular piece of ground, but you will find *The Rock Garden*, by Mr. Reginald Farrer, which may be obtained from our publishing department for 5s., post free, exceedingly helpful not only in forming your rock garden, but also in selecting the plants. From your sketch, especially in view of the fact that you must keep the rock garden low in order to prevent interference with the view from your window, it would appear that a simple rock bed of varied front and ends should suit the position best. By a careful breaking-up of the front line behind the edge of the cement path and at each end you could obviate any appearance of formality. We have seen a rock bed about the same breadth, which is only about 18 inches at the highest part, but looks much higher from the way it is planted. If you make the highest points along the centre you will require to make a paved path next the trellis, but in view of the limited width you might find it more satisfactory to form a very narrow paved path next the trellis; then build a low, rough wall of stones or old bricks to the height of your rock garden and then gradually bring the latter from that height to the front next your cement walk. The former plan would look better, but it reduces the width of the rock garden. This is proceeding on the assumption that you cannot build your rock garden against the trellis, which it would be a pity to do. There is no reason why you should not be able to construct a pretty rock bed capable of growing many good Alpines.

NAMES OF PLANTS: *E. E.* Mesembryanthemum blandum.—*J. G.* 1, Gaultheria Shallon; 2, Thalictrum flavum; 3, Eupatorium cannabinum; 4, Solanum nigrum; 5, Amelanchier canadensis; 5, a form of Zebrina pendula; 6, Achimenes Ambrose Verschaffelt.

PEA HAULM DISEASED: *J. E. H.* The cause of the diseased condition of the Pea haulm is obscure. We expected to find Thielavia basicola, but this is not present. The only fungus found was a species of Fusarium on the stems, but this is not likely to be the primary cause of the trouble. Some cultural error, abnormal weather, or uncongenial soil may be responsible for the physiological disorder.

POTATO WITHIN A POTATO: *M. S. J.* An interesting example of a small, healthy Potato formed inside an old tuber. Such specimens are by no means rare.

SAWDUST AND STABLE MANURE: *J. G.* In the absence of manure from stables, where Bracken or peat moss is used for bedding, we should not hesitate to use manure from sawdust-bedded stables. As much of the dry sawdust as possible should be removed from the manure, but the wet sawdust should be retained, as it will have absorbed urine, which is a most valuable part of the manure. Turn the heap frequently and keep it under cover until the manure is well rotted and ready for use.

SECONDARY GROWTH IN ONIONS: *J. D.* Secondary growth in Onions is caused by moist, warm weather following a dry period, during which the ripening of the bulbs was hastened. The conditions favourable to growth caused the Onions to make a further effort, and this found expression in the division of the original bulb and the development of secondary bulbs at the base from what otherwise would have been latent buds.

TOMATOS DISEASED: *Markham* and *Anxious.* Two fungi were present on the specimens received, the chief of these being a species of Rhizopus, which enters through wounds and causes a "rip rot." The Common Mould (Penicillium) was also present, aggravating the trouble caused by the Rhizopus, but not, apparently, a first cause. Remove affected fruits to prevent the disease from spreading, and keep the atmosphere in the Tomato house as dry and buoyant as possible.

TRUFFLE OR PUFFBALL? *J. D.* The curious little fungus is not a Truffle, but a specimen of the Puffball. This is edible only when quite young and white throughout, but it does not possess the flavour of a Truffle.

Communications Received—Dr. K.—A. S. H.—R. A.—M. J. C.—W. C.—E. P. G.—H. C.—S. A.—W. L.—H. L.—D. McB.—E. M. H. B.—E. T. E.—V. P. G.—W. W.—L. G. P.—W. B.—W. D. & S.—C. J.—R. C.—S. A.

THE
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CONTENTS.

ILLUSTRATIONS.

NOTES FROM KEW.—IX.*

THE joys of the food producer in war time have been felt by the garden staff at Kew. Potatos (British Queen) did well on the Palace Lawn; a yield of 25 tons from about 3 acres sold for £6 per ton. There should be a larger crop next year, as the soil will be in better heart then than it is now. The drought in July checked growth somewhat, and disease made its appearance early in August. The removal of the haulms prevented the tubers from being affected appreciably, less than 5 per cent. having been thrown out as diseased or as chats.

The Onion bed in front of the Palm House (see fig. 41) has given at least as much pleasure to visitors as the flowers did in pre-war times. From the commencement of digging in April to the present time allotment gardeners and other enthusiasts have watched with evident interest the transformation of a famous flower garden plot into an Onion bed. It proceeded without mishap. A few gaps were made, partly by maggot, partly by mildew, and partly by patches of bad soil, but they were not sufficient to prevent the venture proving a decided success, as the following particulars prove:—

Area of planted ground, 2,300 yards (nearly half an acre).

Rows of Onions planted, 320.

Average number of good bulbs in a row, 75.

Average weight of bulbs, ¼ lb. each.

This estimate gives 24,000 Onions, weighing 12,000 lbs., or, roughly, 5 tons of first quality Onions. Not a bad result. The varieties grown are James's Keeping, Cranston's Excelsior, and Danvers Yellow Globe. The seeds were sown in frames in February, and the seedlings were transplanted early in April. Soot was applied twice and the plants were watered on three occasions during the early stages of growth. The soil was prepared by deep digging—the turf being put at the bottom—liming, and a dressing of 20 loads of sewage sludge and 20 loads of rotted Mushroom-bed manure. One application of superphosphate and sulphate of ammonia was given in June.

Nursery quarters and flower-beds have been used for various other vegetables. Cauliflowers, Cabbages, Turnips, and Carrots giving good returns in the early part of the year, with Parsnips, Leeks, and late Turnips to follow.

Maize is a vegetable which English gardeners have neglected. There are dwarf varieties which are as easy to manage as Cabbage, and from each plant one gets a head or cob which, when cooked and dipped in butter, is almost a meal for a man. Cooking is a simple process, being nothing more than immersing the cob in boiling water for about three minutes.

It will appear incongruous to most readers of the *Gardeners' Chronicle* that in "Notes from Kew" one should go forth at length on vegetable growing. The war has wrought many changes, some for the better; and it would be difficult to show that vegetables are outside the province of Kew. It would be easier to prove that Kew should permanently take a more active interest in British fruits and vegetables. The people are keen after knowledge of food plants and correct ways of cultivation. Why not, therefore, grow before their eyes selections of fruit, allowing them to look on and ask questions as they do now with respect to ornamentals? For every one that inquires about rubber, Cotton, Cocoa, and Cinchona, there are a hundred or more inquiries after vegetables and fruits with respect to vegetable and fruit growing.

In former days, when India and the Colonies were being set going in ways of progress and commercial prosperity, Kew had big and important work to do, and as history shows, she did it very well. They are going strong now, and there is therefore less need of Kew's assistance. But there is need of it for the development of the land resources of these islands. Hitherto we have been keen on flowers and things to look at merely. There is more important work to be done, either under the direction of the Board of Agriculture or some other influential body. In the opinion of many Kew might very well be the centre of an effort of this kind. There is Government land in the neighbourhood which could be turned to account in this direction.

The Vine pergola at Kew (see fig. 42) is a good example of its kind. It is a copy of the Rose pergola adjoining the rock garden, which was made about twenty years ago, and has given a good deal of pleasure, most of the Roses on it being happy. I have written elsewhere that the lighter in construction pergolas are, the better; and there is nothing so suitable as iron. The objection that iron injures stems that are in contact with it has no support at Kew; certainly the plants show no injuries of any kind. Iron gas-piping 1½ inch in diameter form the standards, which are kept in position at the bottom by being let into a block of rough stone, and at the top by an iron rod ¾ inch in diameter, turned at the ends and hooked into the standards. Sagging chains stretch lengthways from standard to standard. "For the greater part of the year these pergolas are unattractive, one may say they are downright ugly throughout the winter. Indeed, I have never seen a pergola in the winter in this country that was not" (&c.)

A list of the Vines on the pergola at Kew is given in the *Bulletin*, 1917, p. 90. They were planted in 1902, most of them being plants from an old collection, formerly grown on posts, where they never did themselves justice. On the pergola they are particularly happy, as the photograph here reproduced shows. "As garden ornaments they have no flower beauty to recommend them, nor, in our climate, can we expect them to bear and ripen fruit to any great extent in the open. Their value lies in the noble proportions and handsome cutting of their foliage, their vigour of growth, but above all in the richness of their autumn colouring."

This kind of structure should be useful for the cultivation of the Loganberry and other Brambles of the same character. It would also serve for Gourds grown out-of-doors. There are parts of the country, too, where the hardier varieties of the Grape vine might be successfully grown for their Grapes on a pergola such as this, and a pergola devoted entirely to Wistaria would be delightful when in flower.

Mention was made in a previous article of the African tree Lobelias in the Temperate House. One of them flowered recently, unfortunately not in a position where it could be photographed. It had an erect, leafy stem, 24 feet high, the upper 6 feet densely clothed with flowers suggesting, in pose, an Eremurus or Kniphofia, but without colour attractions, greenish, with big brown pistils. The base of the stem is quite woody; higher up it is like a Cabbage stalk, 9 inches in circumference.

The seeds were sent to Kew by Mr. J. D. Snowden, Uganda, having been collected on a mountain in Ankole at an altitude of 5,000 feet. Other species of tree Lobelia have been found on Kilimanjaro, and on Mounts Kenia and Ruwenzori in British East Africa, at altitudes of about 11,000 feet. An account of them, with illustrations, was published in *Gard. Chron.*, March, 1915, p. 125.

The plant shown in the photograph reproduced in fig. 41 is about 12 feet high, and it may flower next year. The name given to it at the herbarium is L. Giberroa, which species is described in the *Flora of Tropical Africa* as "a tall, woody monocarpic (?) plant, with the habit of a Palm, having a stout, hollow, unbranched stem 12-15 feet high, naked in the lower part

* Previous articles appeared in the issues of January 19, February 9, March 9, April 6, May 18, June 8, July 6, and August 10.

* *Clumber Plants.* Published by Messrs. J. C. & A. E. C. Jackson. Price 3s. 6d.

when in flower, densely leafy towards the top; leaves crowded, sessile, oblong-ovovate or lanceolate, 1½ 2 feet long." This fits the plant under notice, except in respect to height, the specimen that flowered here being 24 feet high. It has ripened seeds freely. This is a plant for

FIG. 41.—ONIONS IN THE FLOWER GARDEN AT KEW.

(See p. 115.)

Frost Gardens, or other places troubled by little or no frost.

Our great success under glass this year has been the Victoria Lily. It started with unusual vigour after planting on April 25, was full grown and in flower by mid June, and has produced three flowers a week, or one every other day since. Three flowers mean three new leaves per week. No plant grows so quickly as this Royal Water Lily. Nine days after a young leaf shows like a hedgehog at the crown of the plant it has expanded to full size. The largest were developed in July and August; they then measured over 7 feet across, with a turned up rim 5 inches deep. There has been no disease this year, owing, probably, to placing 3 lbs. of lime in the water three times a week as a preventive to a fungous attack which in former years was very troublesome.

The Victoria Regia will be grown as long as interest is shown in the wonders of the vegetable world. Its cousins, the tropical Nymphæas, have also made a great display, especially N. gigantea, the Australian beauty, and the Indian N. Lotus. The magnificent N. zanzibarensis no longer exists at Kew, and we have been disappointed in the Nile Queen, Nelumbium. She has made good, parasol-like leaves, but never a blossom.—W. W.

A VISIT TO CASTLE KENNEDY.

I RECENTLY paid a visit to Castle Kennedy, which in olden times was in the possession of the great Kennedy family, but has for a long period been the property of the Earls of Stair, who have gradually created its environing beauty (if we leave out the important contribution of nature to the picturesque scenes) and made it, for lovers of glades and woodlands and exquisite flower gardens, a demesne of horticultural fascination. It is fortunate for Castle Kennedy and the invariably beautiful private gardens at Lochinch Castle, that the Earl and Countess of Stair are keenly interested in horticulture, though of late years, by reason of the exactions necessitated by the war, Mr. Cruden, the gardener, has often had to make grandly grown vegetables take the place of beautiful flowers. Mr. Cruden, like his predecessor, the late Mr. Fowler, is a successful cultivator of fruits, including Grapes, Nectarines and Peaches, whilst hardly less impressive are the Apples, Plums and Pears so electively cultivated in the open, and often subjected, in our Scottish climate, to the most trying atmospheric conditions and influences. The conifers in trees at Castle Kennedy, growing on terraces between the two lakes, are justly famed, and are at present in splendid condition. I was just a little too late, at the period of my visit, to see, in the oval lake, the glorious hybrid Water Lilies, but some of the largest and loveliest of these were still flowering marvellously in that charming "basin," as it used to be termed in former days, and which is especially inspiring when it has a magnificent environment of flowering Azaleas and Rhododendrons, in June. In her attractive "wild garden" the Countess of Stair cultivates Indian and Japanese Lilies, and has splendid results with L. giganteum, specimens some years ago attaining to a height of 15 feet, with 17 flowers. At the time of my visit—though late in the season—many of the Roses and other flowers in the flower garden in front of the Castle were still flowering, with memorable artistic effect. *David R. Williamson.*

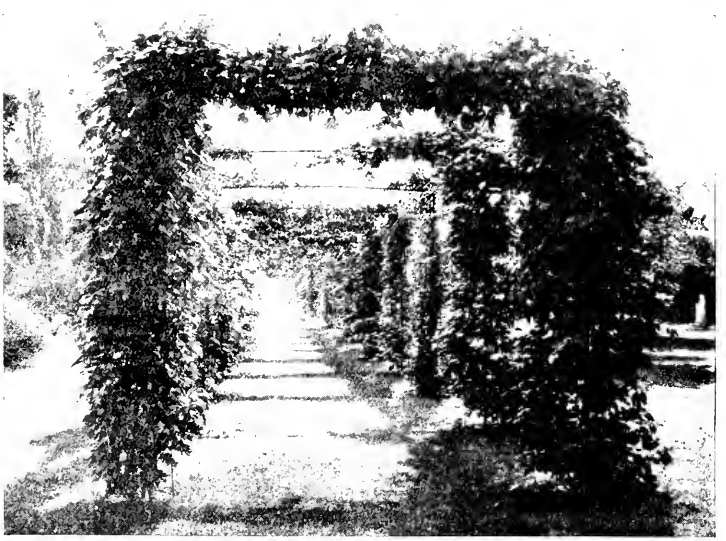

FIG. 42.—THE VINE PERGOLA AT KEW.

(See p. 115.)

FOREIGN CORRESPONDENCE.

DATE OF ROBERT THOMPSON'S BIRTH.

WHEN, after a long interval, Mr. Bunyard resumed his series of "Great Pomologists" with a sketch of Robert Thompson, in *Gard. Chron.*, March 23, 1918, I remarked his statement that while 1793 has generally been accepted as the year of his birth, Thompson's own account, which he quotes from the Chiswick records, gives it as 1799. This would naturally seem final authority, and on the strength of it I changed the dates on a number of catalogue cards, but happening the other day to see the obituary of Thompson in *The Journal of Horticulture*, n.s., 17, 200 (Sept. 9, 1869), I found the following: "Mr. Thompson was born at Echt, in Aberdeenshire, early in September, 1793. The precise date of his birth is not known, as at that period the birth registers of Scotland were not preserved with that care with which they are now. But from his baptism having been on the 16th day of October in the same year we may infer," etc. The same statement is repeated verbatim in the account of Thompson in *The Journal of Horticulture*, n.s., 33, 54 (July 19, 1877). The *Journal* was at that period edited by G. W. Johnson and Dr. Hogg, one of whom I suppose to have written both sketches, though I am not sure which. It is not at all unlikely that the date 1793 may have been a slip of pen or printer, but after it

had been accepted as supposedly founded on a baptismal register, it seems to me that Mr. Bunyard is rather reckless to posit the later date without explaining away the other. If this register were lost, there would be nothing to do but take 1799 as the correct date, though always, it seems to me, with a shade of doubt, but cannot someone at least ascertain whether the register still exists, and if it corroborates Thompson's own record? *M. F. Warner, Washington, D.C.*

FRUIT REGISTER.

APPLE MAIDSTONE FAVOURITE

THE Apple illustrated in fig. 43 is one of the most attractive of all early varieties, its pale creamy yellow colour and rich carmine striping, coupled with an even outline, giving the impression that it has been grown under glass. The flavour is moderately good, whilst the flesh is firm, juicy, and slightly aromatic.

It has been introduced more as a market variety than for the connoisseur, as it fills the gap between Beauty of Bath and Worcester Pearmain, and its excellent cooking qualities and firm texture make it all that an Apple should be in these respects. The variety was raised from a seed of Emperor Alexander, and its appearance suggests that the other parent was Beauty of Bath.

The raisers inform us that Maidstone Favourite having been on trial for many years it can be confidently recommended as a valuable market fruit.

REMARKS ON THE CONDITION OF THE FRUIT CROPS.

(See Tables in *Gardeners' Chronicle* for August 3, p. 42.)

Continued from p. 102.)

5. ENGLAND, S.

DORSETSHIRE.—This season is the worst known in the district, especially for Plums, but April was a very trying month, hot sun during the day and cold winds and frost on most nights. Insect pests were very prevalent. The soil is of a sandy, ironstone nature. *H. Kempshall, Abbotsbury Castle Gardens.*

HAMPSHIRE. The fruit crops in this district are much below the average; in fact, the worst I have known. All trees showed a fair amount of blossom, but the cold winds destroyed it. Strawberries yielded an average crop, but were soon over owing to the drought. Red Currants and Raspberries were very good. The soil is heavy, on a clay subsoil. *Henry Martin, Barthy Lodge, Cadnam.*

—— The fruit crops generally are very poor this season. The weather was most unfavourable at the flowering period; this affected the Plums and Apples injuriously. The caterpillar plague has been very bad throughout the district. There was a fair show of bloom. *Lewis Smith, Cadland Park Gardens, Southampton.*

—— The blossom on Apple trees this year expanded weakly, and failed to set properly. Aphis and American Blight have very greatly checked the growth of the trees. Grenadier, Lord Grosvenor, Worcester Pearmain, Mère de Ménage, and a few trees of Bramley's Seedling are the best cropping Apples this year. *E. Molyneux, Swammore Park, Bishop's Waltham.*

KENT.—Wherever a large crop of fruit was grown last year there has been an almost total failure this season, except in the case of such fruits as are gathered early, e.g., Cherries, Early Plums, and Early Apples. Pears are a total failure, except a few on walls. In the case of Cherries and Plums the severe weather when the trees were in blossom, and the intense heat of Whitsuntide, were doubtless the principal causes of failure. *E. A. Bunyard, Allington, Maidstone.*

—— The fruit crops in this district are the worst for many years. Bush fruits, however, were very good; Strawberries yielded about half a crop. The blossom on Apples, Pears, and Plums could not have looked better, but bad weather and sharp frosts in the early part of May practically destroyed these crops. *J. N. Shann, Bettshanger Park Gardens, Easter.*

—— During the forty-two years I have been here I cannot recall such a shortage of Apples, Pears, and Plums. The trees flowered well, and up to a certain point gave promise of a good crop. I noticed, however, that the petals of the Apple blossoms still remained on the embryo fruits when they should have been falling. Upon examination I found that they were attacked by weevils, with the result that the small fruit and the bloom came down together. This is a pest we have never been troubled with until this season. *J. G. Woodward, Barham Court Gardens, Teston, Maidstone.*

—— In this district the fruit crops are the worst yet recorded. The dull, damp weather in April was probably the cause of failure in certain fruits, i.e., Plums, Cherries, and Damsons. They bloomed profusely, but did not set their fruit, the majority of trees being quite bare. Pears are very scarce indeed, and Apples nearly as bad. A few varieties of Apples, chiefly early sorts, are carrying crops. Small fruits were fairly good; Strawberries looked promising at one time, but owing to continued drought during the growing season the fruits did not swell. The soil is of a heavy, retentive nature, chiefly clayey loam. *J. G. Weston, Eastwell Park Gardens, Ashford.*

—— There was a great show of blossom on Apple trees, but owing to repeated severe frosts very few fruits set. There were some exceptions, however, for Beauty of Bath, Allington Pippin, and Worcester Pearmain are bearing abundant crops. There are no Pears, and Plums are much under average. Damson trees are bearing poor crops. Gooseberries and Red Currants had crops much over the average. Black Currants, although under average, were a fair crop. Raspberries yielded a crop over the average, and the fruits were good where watering was practicable. Strawberries were average, but late varieties suffered from the drought. Loganberries yielded a particularly fine crop. *Charles E. Shea, The Elms, Poots Cray.*

MIDDLESEX. Only on one occasion before in

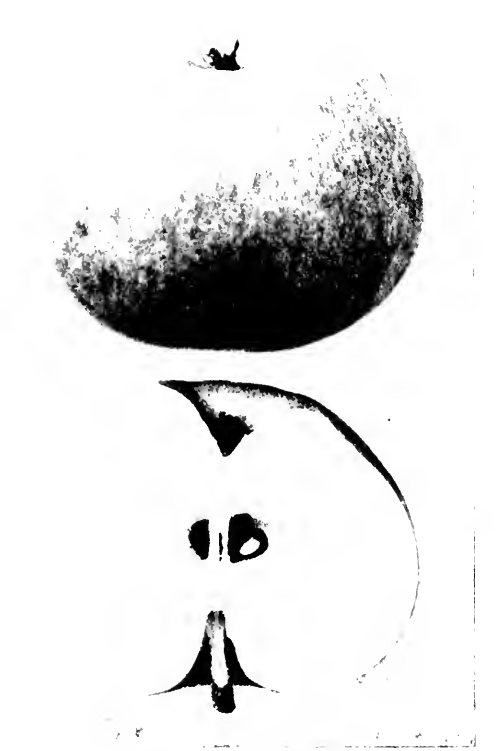

FIG. 43. APPLE MAIDSTONE FAVOURITE.

over 40 years have I had to record such poor fruit crops. Our only fair crop is that of Apples, but American Blight is somewhat troublesome. Small fruits and Strawberries were quite satisfactory. Pear trees are making healthy growth but are not over vigorous. Plum trees flowered well, but the fruits failed to swell after having set freely. Our soil is good loam resting on gravel, with London clay below. *James Hudson, Gunnersbury House Gardens, Acton.*

—— The season is remarkable for the almost complete failure of the autumn fruits. The abundance of Plum blossom gave excellent promise of fruit; the Plum orchards looked, from a distance, like sheets of snow. The scarcity of Pear blossom was striking, but not surprising after the heavy crops of last year. The uncongenial weather at the time of flowering no

doubt chiefly accounts for the absence of fruit. The soil is mainly of a light, sandy loam overlying gravel. *G. H. Head, Fulwell Park Gardens, Twickenham, S.W.*

—— This is the worst year for Apples, Pears, and Plums for many seasons. There is a fair crop of Apples Lord Grosvenor and King of the Pippins, but most of the other sorts are very scarce, including the usually prolific Keswick Codlin. Pears are almost entirely absent as a crop, although a few odd fruits occur in places. The same applies to Plums. Silver-leaf disease is becoming increasingly serious to our Plum trees. Gooseberries were a very fair crop, and for the second year in succession the bushes have been free from American Gooseberry Mildew. Red Currants have been very good, and so have Black Currants in some places. The crop of Raspberries was partially spoiled by the long spell of dry weather. *John Weathers, Park View, Isleworth.*

—— Peaches are very good this year, but Pears and Plums are failures with the exception of two trees of Gisborne Plum, both of which are bearing average crops. Strawberries were good, but Apples are patchy. Raspberries and other soft fruits were light crops. All fruit trees showed plenty of bloom, but the cold weather and the heavy fall of snow during the flowering period did much damage. The soil here is light, resting on a gravelly subsoil. *H. Markham, Wrotham Park, Barnet.*

SURREY.—Pear trees bore no blossom this year except a very few trusses on some varieties. All other fruit trees blossomed splendidly, but the weather was bad while the trees were blooming, and caused a complete failure of the Plum crop. Bush Apple trees on the highest part of the grounds are bearing splendid crops, but in other parts of the gardens Apples are a failure. The soil is very light and porous, with a subsoil of sand and gravel. *S. T. Wright, Wisley, Ripley.*

—— The Apple crop here and in the district is a failure. Most kinds flowered well, but the blossoms seemed to be very weak. The caterpillar plague was even more devastating than last year, although we made an attempt to stay the plague, both by hand-picking and washing the trees. All small fruits would have been up to the average, but were soon over, having suffered much from the drought. Pears and Peaches are complete failures; the latter trees suffered much from leaf-curl. *F. Jordan, Ford Manor Gardens, Lingfield.*

—— The fruit crops of 1918 are as bad as they could be. Cold winds and low temperatures prevailed during the flowering period of Plums and Pears; the fruits set, but all dropped in the early stages. The Apple trees enjoyed good weather while in flower, but the fruit failed to set, and the trees are badly infested with caterpillars. The dry weather adversely affected the smaller fruits; Strawberries were much below the average in size, though the flavour was excellent, and there was no waste from rot. Black Currants dropped quite half their crop before ripening owing to want of moisture. Raspberries yielded an average crop of excellent quality, but the fruit ripened prematurely. *Thomas Smith, Coombe Court Gardens, Kingston Hill.*

—— The fruit crops are most unsatisfactory. After a fair show of blossom the fruits set well, but cold winds in early spring, followed by severe attacks by insect pests, caused great losses. Lack of labour for winter spraying was undoubtedly one of the chief causes of the failure. The soil in this district is very light and sandy. *Jas Lock, Oakham Lodge Gardens, Weybridge.*

SUSSEX.—Apples, Pears, Plums and Cherries in this district are almost a failure. The few fruits on the trees are very poor in quality. Apricots, Peaches, Nectarines, and all small fruits are fairly good in crop and quality. Insect pests are very troublesome; some of the Apple and Pear trees were almost denuded of foliage, although in some cases they were sprayed three times. The soil here is very sandy. *J. W. Buckingham, Midhurst Place Gardens, Liphook.*

—— Fruit crops in general, and Apples and Pears in particular, are much below the average. Currant and Gooseberries bore average crops, but the fruits were small. Cherries were an average crop in some places. The probable causes of the failure of the fruit crop are the over crop of last year and the cold winds and hail storms in the day and the frosts at night, when the trees were in full bloom. Although caterpillars were very troublesome, I do not think they were the cause of the failure, the injury occurring before they appeared. *Leon Squibbs, Stonehurst Gardens, Ardingly.*

—— Our fruit crops are the smallest for 13 years. Bloom was profuse on Apples, Plums, and small fruits, but most of it failed to set. Insect pests, particularly caterpillars, were exceptionally numerous, and they have spoiled the quality of the few Apples found on some of the trees. Scab is also appearing on the fruit. Brown rot is very bad on some varieties of Plums, and there is a good deal of silver-leaf. Only Rivers' Early Prolific and Monarch have average crops. Raspberries were the best of the small fruits. The leaves were stripped from many Gooseberry and Currant bushes by sawfly larvæ. Strawberries yielded a good crop, but of brief duration, owing to drought. There are both heavy and light soils in the district, and crops are about the same on both, though the trees look healthier on the heavy land. *E. M. Bear, Hailsham.*

WILTSHIRE. Pears practically nil. Apples and Plums very seriously "under." Here and there may be seen a few Apple trees bearing average crops. *Thomas Sharp, Westbury, Wilts.*

—— The severe frosts experienced during April, May, and June were very destructive to nearly all kinds of fruits. *Thomas Challis, Wilton, Salisbury.*

(To be continued.)

ORCHID NOTES AND CLEANINGS.

HYBRID ORCHIDS.

(Continued from June 1, p. 226.)

Hybrid.	Parentage.	Exhibitor
Brasso-Cattleya Carmen	B. Dighvana × C. Mrs. Myra Peeters	Stuart Low and Co.
Brasso-Cattleya Imperialis	B.-C. Chiftonii × C. Mossiæ	F. P. Cunliffe, Esq.
Brasso-Cattleya Miranda	C. Iris × B.-C. Mrs. J. Leemann	E. J. Hanbury, Esq.
Brasso-Laelio-Cattleya Muriel	B.-C. Madame Chas. Maron × L.-C. Feronia	Hassall and Co.
Cattleya Lotus	Thurgoodiana × Dowiana aurea	Stuart Low and Co.
Cattleya Orange Gem	iridescens × triumphans	P. Smith, Esq.
Cattleya Sunset	Dowiana aurea × Tankervilliae	C. J. Lucas, Esq.
Disa Italia	Blackii × grandiflora	Flory and Black.
Laelio-Cattleya Contrast	Bella alba × Canhamiana Rex	Sanders.
Laelio-Cattleya Montreal	exoniensis × luminosa	Sanders.
Laelio-Cattleya President Wilson	L.-C. Thyone × C. Dowiana aurea	Armstrong and Brown.
Miltonia Lady Veitch	vexillaria Mem. G. D. Owen × Jules Hye de Crom	Armstrong and Brown.
Odontioda Cheriton	Odm. Vuylstekeae × Odm. Mars	Armstrong and Brown.
Odontioda Juno	Odm. eximilius × Oda. Coronation	Armstrong and Brown.
Odontioda Lorna	Oda. Cambeaniana × Odm. Olympia	Charlesworth and Co.
Odontioda Lyra	Odm. Jasper × Oda. Royal Gem	Charlesworth and Co.
Odontoglossum Cynthia	eximium × Mars	Armstrong and Brown.
Odontoglossum Joy	Pro Skinneri × eximium	C. J. Lucas, Esq.
Odontoglossum Marie	ardentissimum Orchidhurst var. × Colossus	Armstrong and Brown.
Sophro-Laelio-Cattleya Vesuvius	S.-L.-C. Marathon × L.-C. Nella	Flory and Black.

The Week's Work.

THE KITCHEN GARDEN.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

Potatos.—Continue to lift second early varieties of Potatos as soon as they are ready, selecting clean, well-shaped tubers for seed purposes. Allow the seed tubers to lie on the ground for a few days until they are dry, when they should be removed to a cool, well-ventilated shed and exposed fully to light and air. Gather up the large tubers and store them in a cool place or pit until the spring. Discard all tubers showing the least sign of disease.

Brussels Sprouts.—Where these plants are grown in a fully exposed situation they are liable to be damaged by strong winds. Stir the ground freely between the plants and remove all dead and decaying leaves from the stems. After the ground is cleaned draw a quantity of soil to the plants to keep them firm at the roots.

Lettuce.—Continue to put Lettuces in a cold frame in rich soil. Let the plants be fully exposed to the air until such times as they require protection from the weather. Make final sowings in cold frames to obtain seedlings for planting in frames and also for setting out of doors in the spring. Plant the latest seedlings in the open of such varieties as Brown Cos, Hick's Hardy White, and All the Year Round. Protect the plants from slugs by frequent light dustings of soot.

Endive. In many establishments Endive is in great demand, especially where it is used as a cooked vegetable. Unlike Lettuce, fully grown Endive may be kept in good condition for several weeks in various make shift positions, such as the borders of Peach houses. As fast, therefore, as available spaces are cleared of the ground Endive should take its place. Blanching should not be commenced until the plants are nearly or quite fully grown.

General Remarks.—Make preparations for protecting tender crops, such as Vegetable Marrow and French Beans, from injury by frosts, which may be expected any time after this date. Pits and frames should be got in readiness for pricking out Cauliflowers, Lettuces, and Endive, where protection may be afforded when necessary. Every advantage should be taken of fine days to remove weeds and rubbish to the garden fire. Peas and Beans that have finished bearing should be removed and the ground they occupied cleaned. A plentiful supply of dry bracken should be got in readiness for protecting vegetables in the open later.

THE HARDY FRUIT GARDEN.

By JAS. HUDSON, Head Gardener at Gunnersbury House, Acton, W.

The Gathering of Fruit.—Early Apples may have already been gathered and stored. Some of the fruits may prove most useful for the making of jam, or for mixing with Mulberries or Blackberries. It is not necessary to take much trouble with the storing of early Apples, as the fruits will be in almost daily demand for cooking. Early dessert varieties need careful watching, as oftentimes they do not keep well. If needs be use them for cooking rather than allow them to spoil. Mid-season varieties need more care in storing, and these should be graded as they are taken into the storeroom. The most should be made of these mid season sorts to keep the later varieties in reserve for as long as possible. As the cropping this season has been variable, judgment must be exercised to make the Apple crop hold out as long as is possible. So far as can be determined at present Apples are maturing a few days earlier than usual. Do not place the fruits on hay, or even straw. A lattice wood staging is by far the best method. Keep the fruit-room well ventilated for a time, and see that mice do not gain admittance to the fruit store.

Lifting and Replanting Peaches and Nectarines.—This work, which in many soils and situations needs to be attended to every few years, should receive attention. First proceed by mixing a quantity of rich, fresh soil to take the place of that immediately surrounding the trees. If the soil be somewhat poor, mix a little well-decayed manure with it, the best that can be had; break the manure finely before mixing it with the soil. Add some old mortar rubble, or if in a district where limestone is available use that instead. Turn the compost on at least two occasions, and meanwhile keep it covered. Start first with the earliest varieties and finish with the latest; the former can be safely lifted as the true aim is ready for the work. Supply sufficient growths should be reduced as much as possible; all sub-lateral, sappy shoots should be removed. The old shreds and string should be cleared from the branches, and the tree detached from the wall. Take care that the stem is not planted at a lower level than before. Shield the border appear to be too retentive of moisture use some coarse rubble, or place a drain at the front to carry off superfluous water. Distribute the roots equally, pruning them as may be necessary. Press the border firmly and water the roots once at least, soon after the work of planting is finished. Take care that the soil of the border never becomes absolutely dry. The roots will commence to grow almost at once, and sooner than many imagine. Keep the syringe freely in use to wring, since "aphis"

THE ORCHID HOUSES.

By J. COLLIER, Gardener to Sir JEREMIAH COLMAN, Bart., Gatton Park, Reigate.

Seedlings.—Seedlings of Cattleyas and Laelio-Cattleyas raised from late-sown seed should now be far enough advanced in growth for transplanting. It is important that each one be planted separately at the earliest possible date those pricked off into a pan have to make roots before winter. Very small seedlings should be pricked off several together in well-drained pots or pans. Old pots with old soil loose to the most serious disorder. Plants at a more advanced stage may be grown in very small pots. Seedlings that have matured their first pseudo-bulbs will be starting out new roots from the base of the growth; these should be repotted in larger pots and given every encouragement to grow as quickly as possible. They will not make much growth in the winter, and will not require much water at the roots or in the atmosphere as the summer; but the must not be given any season of rest until the flowering stage is reached, but must they be allowed to become root-bound. A suitable rooting medium consists of equal parts Osmunda fibre. All fibre and Sphagnum moss, cut into short portions. Add some chopped moss and crushed crocks, and mix the whole well together. The materials should not be pressed tightly in the receptacles, as it is important that water should pass quickly away. If a house is specially devoted to seedlings of this type of Orchid, it should be kept a few degrees warmer than the one in which the older plants are grown. Should it be necessary to grow them with the older plants, they should be placed in the warmer and shadier part of the house, and near to the roof glass. Seedlings of Cypripediums should also be treated as described above, but a small quantity of fibrous loam, from which all the small particles have been removed, should be added to the compost. The soil should be pressed moderately firmly among the roots. Seedlings of more advanced growth and those nearing the flowering stage, which have filled their pots with roots, should be shifted into larger pots. These should be given a more substantial compost, consisting of at least one-third its bulk of fibrous loam. After the seedlings are rerotted they should be afforded a warm, moist atmosphere and a shady position. Water should be applied sparingly only keeping the compost just moist by frequent light sprayings. Seedling Cymbidiums should be rerotted in a similar rooting medium to that advised for Cypripediums. These plants should be kept growing actively at all seasons until they reach the flowering stage. They should occupy a position near the roof glass in a house with an intermediate temperature. Seedling Odontoglossums in various stages of growth should also receive attention at the roots. Seedlings of the current season should be transferred from the seed-pots to pans similar to those recommended for Cattleyas. Others that are more advanced may be placed three or four together in 60 size pots, and when large enough may be potted up singly. Young plants should not be potted so firmly as the older specimens. When rich moss is used slugs frequently make their appearance, and should be trapped by Lettuce leaves placed on the stage among the plants. The slugs should be sought for with a lantern after dark.

PLANTS UNDER GLASS.

By E. HARRISS, Gardener to Lady WANTAGE, Lockinge Park, Berkshire.

Schizanthus. When the young seedlings are large enough pot them singly into small pots and keep them growing near the glass in a cool pit. Another sowing may be made before the end of the month for later flowering. Sow the seeds thinly in pans and place them in a cool house; as they have germinated they may then be placed in a cold frame until there is danger of severe frost.

Bouvardia. Plants which were planted out of doors must now be lifted and potted. Endeavour to preserve a good ball of roots, and place them carefully in pots of suitable size. When potted the roughly soak them with water and place them in a close pit. Spray them two or three times a day, shield the pit to be bright, and keep them shaded from full sunshine until new growth is well started from the stem. They must be gradually inured to the conditions.

Coleus. [illegible] suitable time to [illegible] from cuttings. Insert the [illegible] and the cuttings in 6-inch pots, and [illegible] the propagating [illegible] The plants must be examined frequently, and the points pinched out as soon as they have developed sufficient roots. Gradually reduce the supply of water to the roots after the stage has developed. When the plants are well established they must be grown [illegible]

Ferns. [illegible] must be kept moist at the roots and [illegible] Take care to see that the fronds are not [illegible] The atmosphere must be kept dry except during the [illegible] of hot sunny days. Examine the plants frequently and remove all dead fronds.

FRUITS UNDER GLASS.

By W. J. GUISE, Gardener to Mrs. DUMSDEIL, Keele Hall, Newcastle, Staffordshire.

Renovating Peaches and Nectarines. The instructions given in last week's article on renovating established Plum trees apply also to Peaches and Nectarines. The trees in the early houses will soon be ripe enough for root lifting or transplanting. In the meantime sufficient compost should be prepared, not only for the early houses but for mid-season ones also. It is most important that the work be carried out during the next few weeks, because it is essential that the trees obtain a good root hold in the fresh soil before cold weather sets in. On no account should manure or leaf mould be added to the compost, or any vegetable matter that would produce rank growth. It is better to incorporate some of the old soil with the new turf rather than make it too rich. Besides the necessary mortar or old lime rubble a sprinkling of wood ash and bone meal may be added with advantage.

Planting Young Trees. It is usually a waste of time and labour to attempt to resuscitate old and exhausted trees, when young ones of good shape and improved varieties can be bought at a reasonable price. It is a good plan to have a few young trees always on hand, of various heights and varieties, to replace failures. At this season quite large trees can be lifted and transplanted to fill any vacancies in early and summer, or late houses, but the work must be carefully carried out if they are to give a fair crop of fruit the following season. Take care that the trees are not planted any deeper than they were before removal; this can be avoided by making the bottoms of the holes firm before planting. Lightly tread the soil about the roots, giving them a slight tilt upwards, as the filling-in proceeds, to encourage fibrous roots near the surface. Give one good watering to settle the soil, syringe the trees twice daily, and apply a light shading until they are established in the fresh soil.

Making New Borders. Most soils can be adapted to the growth of Peaches and Nectarines, provided it is well drained. A good, heavy loam, at least 2 feet deep, and of a calcareous nature, requires very little preparation beyond trenching the ground and incorporating a liberal quantity of old mortar rubble and broken bricks to keep it porous. A suitable selection of Peaches for the season may be made from the following: Duke of York, Hale's Early, Peregrine, Noblesse, Dymond, Walburton Admirable, and Alexandra Noblesse. The following Nectarines are usually found suitable: Cardinal, Early Rivers, Lord Napier, Elruge, Violet Hâtive, Newton, and Victoria. When planting, spread out the roots laterally and make the soil quite firm. Give just enough water to settle the soil; as the trees are likely to sink a little, lying to the wall should be postponed for a while.

THE FLOWER GARDEN.

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

Fuchsia. Though several kinds of Fuchsias are hardy in ordinary winters, it sometimes happens that the weather is too severe for them, and a few should therefore be propagated to meet contingencies. They may be propagated similarly to Pentstemons. I have known Fuchsia roots survive many winters, only to succumb to the first severe frost. Those of the Globosa section and F. Riccartonii are deciduous therefrom, may be lifted before the ground, but they always spring into new growth in spring. It does not usually matter as, like Romneya, Cortusa, the best results are obtained from plants that have been cut down by the frosts. It is essential to house the cuttings early in December, standing them in a frost-proof or nearly frost-proof house, and get the cuttings in February, to be planted later when rooted and sturdy.

Pentstemon. Another batch of cuttings of Pentstemons, which are now numerous on the young shoots, should be inserted in boxes, as advised in a previous calendar. Never allow the cuttings or the soil to become dry. It is perhaps not generally known that the smaller-flowered kinds, such as Pink Beauty, are hardy, or nearly so, and if left untrimmed in winter and pruned in spring, flower earlier, and continue as long in bloom as varieties of the large-flowered section, and besides grow into large specimens. I have had them here of many years' standing and of great decorative effect.

Mixed Borders. Much attention is needed to keep the mixed flower borders trim for the next few weeks, as many plants are "going off," and their absence has to be made good by arranging Michaelmas Daisies, Chrysanthemums, and others to cover them. It is much better to go very frequently over the borders, even if only a few plants need attention, than to wait until large numbers have to be seen to. This method not only saves labour but what is as important, the changes in the border are less, or very little noticeable. It will also be necessary to cut back rampant growths, which are usual at the time of year. Any seeds that are likely to be needed should be gathered at once, and should any changes be in contemplation the identity of plants and clumps must be indicated by labels

EDITORIAL NOTICE.

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

Special Notice to Correspondents.—*The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.*

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

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

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY, SEPTEMBER 23—
National Chrysanthemum Society. Floral Committee at Essex Hall, 3 p.m.; Executive Committee at 55, Wellington Street, Covent Garden, at 6 p.m.

TUESDAY, SEPTEMBER 24—
Roy. Hort. Soc.'s Cons. meet. Vegetable Show, judging at 11.30.

SATURDAY, SEPTEMBER 28—
Finchley Chrysanthemum Society.
National Chrysanthemum Society's Exhibition of Early Chrysanthemums, in connection with Finchley Society.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 55.5°

ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, *Thursday*, September 19, 10 a.m.: Bar. 29.8; temp. 58°; Weather—Bright.

SALES FOR THE ENSUING WEEK.

WEDNESDAY
Sale of Bulbs at 67 and 68, Cheapside, London, E.C., by Protheroe & Morris, at 1 o'clock.

Insect Pests. Although written primarily for the allotment-holder, we are confident that Professor Theobald's little book describing the chief insect pests of vegetable and fruit crops will be both welcomed and used by gardeners generally. Professor Theobald's mastery of his subject is unrivalled, and is revealed, perhaps, even more strikingly in this primer than in his large and classic work, which is, or ought to be, in the hands of every fruit-grower. It is no easy task to write a great little book, yet this Professor Theobald has succeeded in doing, and for this achievement our congratulations and thanks are due. The author does not waste words in general discourse, but addresses himself, after the briefest introduction, to a description of the life-history of the pests which commonly attack garden crops. The descriptions are concise, and yet sufficient for the purpose, and are assisted considerably by the illustrations which accompany them.

The post of dishonour in this record of insect crime is rightly given to the wireworm, which is of all pests, except, perhaps, eelworm—that which does most harm to garden crops. Professor Theobald, after describing the larva and mature form, shows the cultivator how he may best combat the ravages of this pest by sowing suitable crops on infested ground—Peas, Beans, etc., in place of those, such as Potato, Turnip, and Swede, which wireworms attack voraciously. The methods of trapping and of soil treatment are also described, though we notice omission to refer to the benefits which are to be obtained by the use of soluble nitrogenous manures—such as sulphate of ammonia—applications of which are often remarkably efficacious in enabling the plant "to grow away" from the pest. The Leather Jacket, which in the present season is responsible for much of the damage erroneously attributed to wireworm, is said by Professor Theobald to be readily extirpated by such soil insecticides as naphthalene, and a good word is also said for gas-lime as a destructive agent, though, unfortunately, good gas-lime—the smell whereof we all disliked so heartily when it was plentiful—is now often hard to come by.

Among the other pests which are described with brief and skilful pen are the Turnip flea beetles, weevils of Pea and Bean, cockchafers (white grubs), cutworms, some of the chief fruit-tree pests, such as winter moth and codlin moth; fly of Onion, Carrot, Celery, Beet, and Cabbage root; sawflies, aphides, scale insects, and snow flies. Last, and, unfortunately, none too numerous, are the beneficial insects, including Ladybird Beetles, which feed on aphides and scale insects, and hence deserve every protection; the Lacewing flies, of evil smell, but whose larvae are of undoubted utility in destroying plant-lice and scale insects; and the Ichneumon flies, which so often correct the balance of Nature by acting as parasites of pests, and hence keeping down their numbers. A section on simple insecticides concludes this admirable little work, which, as we have said, should prove both useful and instructive to all gardeners, whether allotment-holders or professional cultivators. Its appearance is opportune, for this year is, we fear, likely to prove an exceptionally pestful year, and the more general a knowledge of the damage done and of the means of preventing it, the less the crops on which so much dependence is placed are likely to suffer. We would suggest that in the next edition the author adds a chapter on the birds which are enemies of insect pests.

Insect Enemies of the Allotment Holder. By Fred. V. Theobald, M.A. Pp. 59, with illustrations. Price 1s. 6d. (Published by the author, Wye Court, Wye, Kent.)

Climbing Beans at Wisley. — The Royal Horticultural Society wishes to draw attention to the extensive trial of Climbing Beans of all kinds now at their best in their gardens at Wisley, Ripley, Surrey. The high food value of these plants makes them most valuable to grow in the garden, and the Council feels that they are cultivated far too little. All types are well represented in the collections now growing there (139 stocks), and comparisons may readily be made of their habit of growth and cropping qualities. The use of the pods in the green state is, of course, well known to all, but comparatively few realise the value of many varieties, such as those of the wax-pod type, for cooking whole, the usefulness and high food value of the half-ripe seeds, and the possibility of growing Haricot Beans for storing dry and use in winter. Any variety may, in fact, be so used, but differences in yield, colour, and flavour make some more desirable than others.

Protection of British Wild Birds.—The war put a stop to the deliberations of the Departmental Committee appointed by the Home Secretary in 1913 to consider amendments to the law relating to wild birds, and its administration. It is hoped, however, when the Committee meets again, with the evidence it has already accumulated, it will be able to suggest lines upon which a new Wild Birds Protection Act may be framed. The creation of an Ornithological Bureau is suggested as an important matter for consideration.

The Clove Industry of Zanzibar. — On the authority of the United States Consul at Mombasa, we learn that 90 per cent. of the world's supply of Cloves is furnished by the plantations in the Sultanate of Zanzibar (the islands of Zanzibar and Pemba). It is estimated that 54,000 acres are devoted to the cultivation of Cloves, and that this area contains about 5,700,000 full-bearing trees. The annual average production is about 5 lbs. per tree, and the total 1915-16 crop came to 26,267,315 lbs. Nearly one-half of the crop goes to India; the next best customer is Great Britain, with the United States and France following. Two other very interesting facts appear: one is that the Clove industry—so far as cultivation and harvesting are concerned—is in the hands of Arabs, and has descended from father to son for many generations. The other fact is that efforts to establish Clove groves in other parts of Africa, where soil and conditions appear to be similar to those of Zanzibar, have failed utterly.

Control of Fertilisers in France.—A central office, under the control of the French Minister of Agriculture, has been created to deal with the supply and conservation of artificial fertilisers during the war, and for a year afterwards. The department will have power to buy, or to requisition, all artificial manures, fertilisers, fungicides, and insecticides, as well as all the materials necessary for their manufacture. Power will also be given, if necessary, to enforce the declaration, by holders of chemicals or materials, of the stocks they possess.

Canteloup and Water Melon Cultivation in the United States. The enormous extent of Melon cultivation in the Southern United States of America may be gathered from the following figures, recently published in *The American Florist*. The commercial acreage of Canteloup Melons in 1916-1917 respectively was:—Georgia, 3,139, 7,980 acres; Florida, 784, 1,065 acres; Colorado, 4,595, 5,085 acres; New Mexico, 700, 700 acres; Arizona, 2,260, 3,020 acres; Nevada, 200, 500 acres; California, 15,141, 16,059 acres. Totals, 26,819, 34,409 acres, a decrease this year of 7,590 acres, or about 22 per cent. The acreage under Water Melons in the following States for 1916 and 1917, respectively, was: Georgia, 19,995, 31,133 acres; Florida, 10,653, 21,173 acres; Alabama, 3,739, 5,767 acres; Texas, 9,230, 13,605 acres; Arizona, 200, 150 acres; Central California, 1,400, 1,665 acres. Totals, 45,217, 73,493 acres, a decrease this year of 28,276 acres, or about 39 per cent.

Georgia State Forest School.—To meet the shortage of lumbermen in the United States caused by the way in which forest students responded to the call for fighting men for the war, the Georgia State University is arranging a special one-year course of instruction in practical logging engineering. The course is divided into four terms and open to men of good character eighteen years of age, and who have a sufficiently good general education to enable them to pursue the work profitably. The practical side of the work is emphasised during the course,

but especially during the fourth term in the woods. Each branch of the work is first considered theoretically and then followed by practice in the wood and field. Every student is required to carry out each operation in logging, milling, scaling, etc., and certificates are awarded only to those who successfully complete the prescribed course at the State Forest School.

Potash from Californian Kelp.—The August issue of the *Journal of the Society of Chemical Industry* contains an account of an extensive industry near San Diego, California, where potash and acetone are produced on a large scale from the giant Kelp of the Pacific Coast. The works cover 30 acres of land, and over 1,000 men are employed. The production of acetone for the British authorities is the chief business at present, but various by-products are being developed in increasing quantities. In 1917 about 24,000 tons of Kelp were cut and dealt with each month.

Pomological Station in Brazil. The Brazilian Government has sanctioned the establishment of a Pomological Station at Deodoro, Brazil, where one tens of established varieties of fruits will be grown, new varieties and species tested, and indigenous fruits selected and improved. It is also the intention to start a school in connection with this station for students desirous of studying the pomological branch of agriculture.

Prize for Blackberry Pickers. As an incentive to increase the output of preserving the crop of Blackberries the Ministry of Food Committee is offering a silver cup to be won by the local council which produces the best record for picking this wild fruit.

Prices for Marrow Jam. By a recent Order, amending the Jam Prices No. 2 Order published on September 1, the Food Controller fixes the prices of Marrow Jam, Marrow and Lemon, Marrow and Raspberry, Marrow and Red Currant, Marrow and Elderberry, Marrow and Ginger, Marrow and Strawberry, Marrow and Blackberry jams as follows, the prices being the same as those payable for Damson and Apple and Gooseberry jams: Wholesale, 1-lb. jars, 7d.; 3-lb. jars, 2s. 4d.; 7-lb. tins, 5s. 5d. per 7 lbs., 7d. per lb. Retail, 1-lb. jars, 11d.; 2-lb. jars, 10d.; 3-lb. jars, 3s. 3d.; 7-lb. tins, 9s. 3d.

Wood for Fuel. An Order dealing with the sale and distribution of fuel wood fixes the maximum price at 30s. a ton, cash for logs considered retail in ratio value to that of coal. The Timber Order requires every person having timber to deliver it to the fuel wood which can be produced from the waste for sale at a fixed price. The distribution will come under the control of the agencies set up by the Controller of Coal Mines. The Local Fuel and Lighting Committee will be empowered to fix the maximum price for the wood. No one will be entitled to buy more than two tons of the wood in the year without a permit from the Local fuel overseer. Where fuel wood is plentiful consumers will be required to take a proportion of their allowance in wood instead of coal. It is hoped that timber will be available in all except the large industrial centres. The price will necessarily be less nearer the points where fuel wood is produced.

War Item. Lieut. C. RALPH CURTIS, only son of Mr. and Mrs. CHAS. H. CURTIS, has been wounded in the recent fighting; after being wounded he was blown some distance by the explosion of a shell, and immediately afterwards buried under the soil of what he says "was a shell." He is in hospital in France and making good progress.

Publications Received. ***Land Settlement in South Africa: Land for Settlers.*** Union of South Africa. (Capetown: Samuel Griffiths & Co., Ltd.)—***Medicinal Herbs and Poisonous Plants.*** By David Ellis, D.Sc. (London: Blackie & Son, Ltd.) Price 2s. 6d. net.

ON INCREASED FOOD PRODUCTION.

A PROLIFIC POTATO CROP.

ON April 9 I planted 14 lbs. of seed tubers of Stirling Castle Potato. On August 28 the crop was lifted, and the produce weighed 4 cwt. 26lbs. The tubers were of first quality, with no disease, and only a very few small ones. This variety was introduced by Messrs. Sutton and Sons in 1914, and would seem to have a brilliant future. An allotment holder in the neighbourhood informed me that he also was lifting nearly as much per rood of the same variety.

It would be interesting to learn from readers of the *Gardeners' Chronicle* whether this is approaching the record crop for ordinary cultivation.

Hon. Sec. Allotments Committee, Lehigh Park, Reading.

MANURES.

STABLE and farmyard manure are often much too valuable on the smaller gardens, and so far no single substance has been discovered to take their place with like results.

Each has its special importance, but to be considered, (1) the richness of the soil in the three chief plant food elements, nitrogen, potash, and phosphorus, and its mechanical condition.

Where artificial manures alone are used there is a danger from two sources, first of altering the right proportion of the above substances, thus inducing other undesirable chemical conditions; and secondly, of allowing the soil to become close and inert from lack of organic matter. The latter condition will soon be apparent should the soil be of a naturally heavy nature. The full use of garden refuse as manure will do much to mitigate this, apart from the considerable amount of plant food which it contains.

All kinds of vegetable trimmings, weeds, Potato haulm (if free from disease), and anything that will decay completely, may be put on the heap, and it is a good plan to allow it to remain a season, using each year the accumulation of the previous season.

Horse soils, however, might probably benefit more if the material is applied in a half-decayed condition, provided natural lime is not lacking.

Lighter soils should receive a thorough rotted. The practice of mixing lime with the

[Photograph by E. J. Wallis.

FIG. 44.—LOBELIA GIBBEROA IN THE TEMPERATE HOUSE, KEW.

(See p. 115.)

potash as plant food. Also, we may ask ourselves whether certain kinds of refuse are of most value green, or partially or completely decayed.

The full use of vegetable matter, with a judicious and intelligent application of artificial or chemical fertilisers, may perhaps go far towards solving the difficulty of manuring.

Lime is of the utmost value: applied to a heavy soil it breaks up the clay and sets free quantities of potash. At the same time it renders available what small amount of humus is present by converting it into plant food. This, while benefiting the present crops, renders the application of organic material superative.

An old soil which has been well manured for many years will be rich in humus and inclined to acidity. Such a soil, with light dressings of lime at fairly frequent intervals, would suffice for several seasons without animal manure, and, in fact, benefit from such treatment. Afterwards, of course, organic material of some kind will again be necessary, and light applications of fertilisers containing potash and phosphates advisable. *Sydney Ashmore.*

HOME CORRESPONDENCE.

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

Fruit Crops in Hampshire.—The Apple crop here is very satisfactory, and quite the best I have seen this season. The varieties Newton Wonder, Lane's Prince Albert, and King of the Pippins are especially good. Pears are rather scarce with the exception of Marie Louise. Victoria Plums have been a very fair crop, but Jefferson and Gage Plums were failures. *T. Tomson, Dogmersfield Park, Winchfield, Hants.*

American Blight.—In your issue of August 30 Mr Molyneux says he does not know how the Woolly Aphis spreads so quickly. There are two ways, one on the feet of birds, the other by flying. A great many fruit growers in this country seem to be ignorant of the fact that at one stage of its life the Woolly Aphis has wings; unfortunately I cannot give the season of the year, as most of my experience of the pest has been gained in Tasmania. After travelling over England—north, south, east and west—I am surprised at the extent to which this pest has spread during the past thirty years, especially in the south, and the indifference with which the average grower seems to treat it. There are several methods by which the tops of the trees can be kept reasonably clear. The best is by spraying the trees with kerosene emulsion. Kerosene 1 gallon, soft soap 1 lb., water 2 gallons, for winter use, and 15 gallons of water to one of kerosene for summer use, though I would not recommend anyone to spray in summer, as the emulsion has to be applied with considerable force, and I always found that if the spraying was well done in winter very few insects were left alive. If only a few bush trees have to be treated the best and easiest way is to work carefully over them in winter with a brush and petrol: the latter is instant death to the pest and does not damage the trees, as so very often happens when creosote or similar remedies are applied. The later in the season this is done the better, and the application is quite safe so long as the buds are dormant. Dealing with the pest on the roots, where it does as much or more damage to the tree, is a more difficult proposition, and I do not know of anything that could be profitably used on a large scale. When only a few trees are to be treated bisulphide of carbon will kill the pest, but this method requires a special apparatus. The best way to prevent American Blight from reaching the roots is to plant trees worked on blight-proof stock—Northern Spy, for instance. The nurserymen in this country do not seem to use this stock, while in Australia all the big nurserymen use nothing else. Now a word of warning to those about to plant trees this year. Examine them carefully, both stems and roots, and if any Woolly Aphis is found on them and the district is clean burn the trees. I bought trees sufficient to plant a few acres from a nurseryman whose catalogue stated his stock was guaranteed free from disease. When I commenced to plant I found American Blight on the first bundle, so I very carefully examined the whole lot and burned every tree on which I found the pest. The attack was not a bad one, but if I had not known the pest and had planted the trees, in a few years every tree in the orchard would have been infested. *R. C., Wilts.*

"Rogues" among Potatos.—I have pleasure in replying to Mr. Cuthbertson. A new Potato produced from a tuber of Sharpe's Victor in 1905 is in my possession, but as it is not an advance on the original sort, it has remained in my use alone. It is a good quality Potato, and early, but not one of the very earliest. Improvement has taken place through careful cultivation. I have not been able to test it under forcing conditions, so I cannot speak of it in that respect. I planted Sharpe's Victor, from Potatos I had exhibited at Shrewsbury Show, in a small vegetable plot belonging to one of my children. I noticed the difference in the growth, and allowed the plant to ripen. Then I sought the opinion of others, among them Messrs. Dobbie's representative at our show, who said it was Sharpe's Express. I therefore grew it side by side with that sort, but it proved not to be Sharpe's Express. Thereupon I sought Messrs. Sutton and Sons' representative, who desired me to write to his firm. I did so, with the result after years of trial in their grounds and in my own garden, with various sorts mentioned by that firm, it could not be named as any known Potato. My object was to find out, if possible, whether the Potato produced new sorts apart from seed. Having gone so far, I wrote to Kew asking if the Potato did so, and was at once informed that it did. I was referred to Darwin's *Variation of Animals and Plants under Domestication*, at a certain chapter and page, for what I sought. From our free library I obtained the book. In Chapter XI., p. 410, Darwin states: In the common Potato (Solanum tuberosum) a single bud or eye sometimes varies and produces a new variety, or occasionally all the eyes in a tuber vary in the same manner and at the same time, so that the whole tuber assumes a new character. For instance, a single eye in a tuber of the old Forty-fold Potato, which is a purple variety, was observed to become white; this eye was cut out and planted separately, and the kind has since been largely propagated. Kemp's Potato is properly white, but a plant in Lancashire produced two tubers which were red, and two which were white; the red kind was propagated in the usual manner by eyes, and kept true to its colour, and, being found a more productive variety, soon became widely known under the name of Taylor's Forty-fold. The old Forty-fold Potato, as already stated, is a purple variety, but a plant long cultivated on the same ground produced, not, as in the case above given, a single white eye, but a whole white tuber, which has since been propagated and keeps true. Several cases have been recorded of large portions of whole rows of Potatos slightly changing their character. *S. Jackson, Shrewsbury.*

Trichinium Manglesii.—This Trichinium, of which a characteristic illustration was given in *Gard. Chron.*, August 24, fig. 81, is such a desirable greenhouse plant that it is surprising it is not more often met with. A native of the sandy districts of Australia, from whence it was introduced in 1838, it is now rarely seen outside botanic gardens. The general appearance of a flowering plant is well shown in the illustration. It is a member of the order Amarantaceæ, and the inflorescences retain their beauty a considerable time. While a temperature such as Heaths and Pelargoniums delight in is very suitable for this Trichinium, it will not conform to a rough and ready mode of treatment. A soil principally composed of loam lightened by a little well-decayed cow manure or leaf mould, and silver sand, will suit it well. Repotting should be done as soon as the flowering season is past, and in carrying this out the greater part of the old soil should be removed. The plants should be grown on a light, airy shelf in a greenhouse at all seasons. The plant may be propagated from root-cuttings taken off when potting: portions of root about an inch long should be dibbled into well-drained pots filled with sandy soil. They will root readily in a house having an intermediate temperature. *W. T.*

London and Wise's "Complete Gard'ner."—This translation of La Quintinye's work is by no means uncommon. At least seven editions of it were published, if not more. If Mr. Shelley's copy is perfect and in fair condition a fair average market price for it would be about 2s. 6d. or 3s. I find, in a recent catalogue of a leading London second-hand bookseller, the third edition offered at 9s. Another firm quotes a copy of the 7th edition at 3s. But these people are specialists, and their prices are "selling" prices. *C. H. P.*

SOCIETIES.

ROYAL HORTICULTURAL.

TRIAL OF RUNNER BEANS.

The following awards have been made by the Council of the Royal Horticultural Society to Runner Beans after trial at Wisley:—

FIRST-CLASS CERTIFICATE. *Prizewinner*, sent by Messrs. Dickson and Robinson.

AWARDS OF MERIT.—*A1*, sent by Messrs. Sutton and Sons; *Scarlet*, sent by Messrs. Sutton and Sons; **Scarlet Emperor*, sent by Messrs. J. Carter and Co.

HIGHLY COMMENDED. Best of All, sent by Messrs. Dickson and Robinson; Champion Runner, sent by Messrs. Dobbie and Co.; **Champion Scarlet*, sent by Messrs. Barr and Sons; Giant Exhibition, sent by Messrs. Dickson and Robinson; Hollington Dwarf, sent by Messrs. Barr and Sons and Messrs. Cooper, Taber and Co.; Improved Painted Lady, sent by Messrs. Sutton and Sons; Mikado, sent by Messrs. Barr and Sons; Red Giant, sent by Messrs. J. Carter and Co.; Scarlet Emperor, sent by Messrs. Sydenham, Ltd.; The Czar, sent by Messrs. R. Veitch and Son.

COMMENDED.—Best of All, sent by Messrs. Sutton and Sons.

SCOTTISH HORTICULTURAL.

SEPTEMBER 3. The monthly meeting of this association was held at 5, St. Andrew Square, Edinburgh, on this date, Mr. Robert Fife, president, in the chair. A paper was read by Mr. R. Dickson, of Messrs. Dobbie and Co., on "The Dahlia." A fine exhibit of the different types of this flower was shown by the firm. Mr. Dickson dealt mainly with the historical and evolutionary aspects of the question.

UNITED HORTICULTURAL BENEFIT AND PROVIDENT.

SEPTEMBER 9. The monthly meeting of this society was held in the R.H.S. Hall on Monday, the 9th inst., Mr. Chas. H. Curtis in the chair. One member was elected. The Army Form of the late Pte. J. H. Smith was received, also the death certificate of one member, and the sum of £15 2s. 9d. was passed for payment to their respective nominees. One member was assisted from the Distress Fund. The ordinary sick pay for the month was £65 5s. 9d.; State Section, £23 12s. 6d.; and maternity benefits, £9.

ROYAL ENGLISH ARBORICULTURAL.

THE annual meetings of this society were held in London during the week ending September 14. The general meeting took place on Wednesday, the 11th inst. Lord Barnard, D.C.L., F.S.A., presided. Important alterations were made in the rules, and other steps taken to place the society more advantageously for the new duties devolving upon it in connection with the need for reafforestation.

Major G. L. Courthope, M.P., was unanimously elected president in the place of Lord Barnard, who was elected to the Council in view

* Specially fitted for market purposes.

of his exceptional service to the society during the past four years.

The Earl of Plymouth was elected vice-president.

For obvious reasons the society's meetings, which in pre-war days were held over a period of a whole week, are much fewer, but to Mr. M. C. Duchesne, the London secretary of the society, credit is due for organising a most interesting and instructive forestry meeting, and an outing to Kew Gardens was arranged for the Thursday. The members were met at the Lion Gate at 10 a.m. by Mr. W. Dallimore, of the Forestry Museum Department, Kew. One of the first objects noticed was a healthy specimen of Picea Breweriana, a new Spruce.

In passing, Mr. Dallimore called attention to Rhamnus Purshiana, an easily-grown tree, the bark of which produces a useful drug, and the wood of which is possibly as suitable for obtaining charcoal for the making of gunpowder as the better-known R. frangula.

Coming to the Larch collection, Prof. Augustine Henry, of Dublin, led a useful discussion on the relative merits of the various kinds. Larix occidentalis planted at Kew in 1831 and 1869 was held not to be comparable with the common Larch as a timber tree in this country. A peculiar feature of this Western Larch is that the cones ripen in September, and the seeds fall out immediately, being thus difficult to collect.

The Siberian Larch, a very distinct form, and narrow in habit of growth, of which the specimen inspected was planted in 1874, was also regarded as being commercially useless. In this country it usually comes into leaf early and gets damaged by frost. L. americana, bearing small golden cones, is of no better value than the Siberian Larch, but has the advantage of growing well on swampy ground.

L. kurilensis, from Northern Japan, having a Cedar-like habit, is decidedly ornamental; it was likewise voted "not useful."

Summing up, the field is still held by L. europæa (the common Larch) and L. leptolepis (the Japanese Larch), both being well-loved popular taxons as the staple British timber trees.

In the Queen's Cottage Grounds an experimental plantation of Elm was inspected, the plants being seedlings from sources which go to prove Prof. Henry's theory that species produce true progeny and hybrids produce variety.

Near this a plantation of Larix occidentalis (Western Larch), raised from seeds collected by Prof. Henry, sown in 1909 and planted in 1915—with a group of common Larch sown and planted at the same time, which proves the great superiority of the latter for this country.

Coming to the Pinus, some fine plants in the Cembra group proved to be P. armandii, being early introductions by Prof. Henry of the more recently collected species from the same source by Mr. Wilson. These plants are therefore the first and largest specimens in the country.

A good word was said for Pinus Pinaster, of which large quantities of timber are drawn in normal times from France as pitwood for the South Wales collieries. This Pine has proved a useful tree for planting in sand dunes and dry positions. Spruces in general are not a success at Kew.

One species which commanded general attention, however, was Picea Omorika, the Serbian Spruce, good plants of which were noticed; these were planted in 1891.

Near the lake some interesting forms of Abies were inspected, one fine tree being a Kew hybrid, with Abies cordifolia, a robust grower, and A. firma, the latter Hornbeam-like, and desirable as an ornamental tree.

The huge British Columbian flagstaff came in for much admiration, and considerable speculation with regard to ways and means of erecting it in position. It is 214 feet in length, 2 feet 9 inches wide at base, and 1 foot wide at the small end. The noble Douglas Fir from which the flagstaff was obtained must have been about 300 feet high when felled.

Passing the Ash collection, among which Fraxinus excelsior heterophylla, F. coriacea, and F. americana seem to be specially worth planting as decorative trees, and a very fine, well proportioned Tulip tree 65-70 feet high, a group of Poplars was inspected.

Populus Eugenei, planted in 1888, was strongly urged by Mr. Dallimore in preference to P. serotina for profitable cultivation, the habit being more erect and close branched.

Extensive cultivation of Poplar was later in the day advocated by Mr. Pratt, an ex-president, and others members as one of the most profitable trees.

Of the Birch family, Betula occidentalis was held to be a promising forest tree, while B. Maximowiczii, a Japanese Birch, is a fine ornamental subject.

EDINBURGH ALLOTMENTS FEDERATION.

A VERY successful exhibition was held on September 6 and 7 at the Synod Hall, Edinburgh. The exhibits consisted chiefly of vegetables of a useful character, and the standard of quality was excellent. The entries were numerous, and the trade was well represented. A very interesting and educative exhibit (see fig. 45) was staged by the Parks Department (superintendent, Mr. J. W. McHattie), consisting of Potatos (eighteen varieties), Peas (fourteen varieties), Cabbages (six varieties), Kidney and Runner Beans, Tomatos, and various other choice vegetables. Altogether there were 121 dishes in the exhibit, of which we give an illustration (see fig. 45). The show was opened on the first day by Sir John Lorne M'Laod, Lord Provost, and by the Secretary of State for Scotland, Mr. Munro, on the second day.

FIG. 45.—VEGETABLES FROM THE EDINBURGH PUBLIC PARKS EXHIBIT AT EDINBURGH EXHIBITION.

SOUTHEND FOOD-PRODUCTION.

SEPTEMBER 15 AND 16.—Under the auspices of the local Food Production Society, a potato exhibition was held in the High School for Boys at Southend, on the above dates. The entries exceeded those of 1917 by more than one hundred. Competition was keen in most of the classes, notably in those for collections of allotment produce, six dishes of vegetables, four dishes of vegetables, and Potatos. The list were shown to fine form, but the number of exhibits from cultivators was not so large as last year. In the class for any other vegetable than those specified in each dish classes there was but a very moderate exhibits, varying from Haricot and Butter Beans and Cornobs, to Red Cabbage and Pumpkins. The local competitions, in which allotment holders in the several districts of Southchurch, Prittlewell, Leigh, Westcliff, Thorpe Bay, Chalkwell Bay and Crowstone competed on even terms with each other, proved most interesting, and one grower, who gained a 1st prize in his district class (four kinds of vegetables), also secured the championship prize for the whole series, and a special prize offered by Mr. Arthur Sutton.

The domestic section of the exhibition was interesting and instructive, providing a feature which might well be copied in other towns. In this division prizes were offered for the best bottled fruits, for jams and other preserves, for salad dressings, and for cakes, meat pies, and bread. In every case the competitor had to place the recipe against the exhibit, and where, as with the cake, a price limit was imposed, the cost of the ingredients had to be added.

Messrs. SUTTON AND SONS provided a wonderfully fine display of vegetables, and were awarded a Gold Medal. A Silver-gilt Medal was granted to Messrs. H. CANNELL AND SONS for a score of dishes of excellent Apples. Mr. KELLING, gardener to the Southend Corporation, gained a similar award for a collection of produce grown in the Corporation Parks; the collection included fine Sea Eagle and Grosse Mignonne Peaches, excellent ridge and frame Cucumbers, and a large variety of vegetables and salads. The Royal Horticultural Society supplied a small "Food Production" exhibit with a representative in charge, who answered a great variety of questions on gardening; and the Food Production Department sent a lady demonstrator, who made canning, bottling, and drying fruits and vegetables appear the simplest of processes.

BRENTFORD ALLOTMENTS.

IN 1917 the Brentford Allotment Association held a capital exhibition of vegetables. The exhibits were judged by professional judges, but not one penny of prize money was offered. This year, on the 7th inst., the second show was held in the Rothschild Schools, and modest prizes were offered. There were about 200 entries, and their arrangement in the show was evidence of excellent organisation, while the staging of the exhibits was far in advance of what is common at local displays. Potatos were splendid, notably the collections of six and four dishes; the first prize six dishes would have been difficult to beat at a R.H.S. vegetable show. The collections of produce from any one allotment proved interesting and educational; indeed, the educational value of the exhibition was kept in view always, and in very many instances the labels conveyed not only the varietal name of the vegetable, but the date of sowing or planting, source of supply, and other points of value.

The Royal Horticultural Society sent models of insect pests, of digging and trenching, together with photographs and lantern slides showing various items of garden work. The pig-keeping section of the Association showed two pigs killed and cut up ready for distribution among the members.

TRADE NOTE.

GOLDEN WEDDING OF MR. AND MRS. F. GEE.

ON the 9th inst., Mr. and Mrs. Frederick Gee celebrated their golden wedding at Riverford, Biggleswade. Mr. F. Gee, a well-known seedsman, is now in his 75th year, and still takes a great interest in the business he has done so much to build up, and also in public affairs. The golden wedding celebration was attended by members of the family and many friends. Congratulations were received from many parts of the world, including several from younger relatives on active service. The Biggleswade Urban District Council sent a special congratulatory resolution; Mr. Gee was chairman of this body in 1911-1914, and he is a J.P. of the County of Bedford.

CROPS AND STOCK ON THE HOME FARM.

PREPARING FOR WHEAT.

WHEAT has this season been so generally successful, and is regarded as the most essential of all crops on the farm for the needs of the nation, apart from its value to the grower, that an extra area is certain to be devoted to this cereal in the coming season. Somewhat tardily the Government has fixed the price of Wheat for the year, but from various points of view they have not done so well as they might. The price commences at 75s. 6d. per qr. of 504 lbs., and continues at this rate until January, 1919, when it will be 76s. The following April the price will be 78s. 6d., and that value will continue until June. Thus we get two sixpenny advances for the whole season. What incentive is there for the farmer under this prospect to hold any Wheat whatever? Some unthinking person may perhaps say, "why should he keep it to increase the price?" The answer is not that he wishes to increase the price, but anyone can see how little English Wheat there will be in April and May of next year. What with the loss from rats and mice, and other causes, there can be no individual gain by attempting to hold any of this crop.

For the security of a greater yield in the spring the prices should have started a trifle less and advanced up to, say, 80s. per qr.

I would advise those who contemplate ploughing grass land not to plough too soon, either for Wheat, Oats, or Barley.

In the ordinary way of cropping arable land there are several good preparations for the Wheat crop. Sheep fed Rape, or Rape and Turnips is an excellent plan, as is Mustard growing 2 feet high, ploughed into the soil and firmly pressed; this latter plan answers well where sheep are not kept, or where manure is scarce. Pure Clover has been regarded for ages as the ideal Wheat preparation, owing to the fact that Clover, being a leguminous plant, appropriates nitrogenous food from the air by the agency of nitrifying bacteria, and therefore leaves the soil rich in this plant food. In stiff soil I prefer to sow Oats in spring, as I find there is too often a loss of plant during the winter months should there be continued rains, owing mainly to the fact that surplus water from heavy rains does not percolate freely through the press marks in each furrow. With Oats sown on this land in February or March there is less risk.

Summer fallowing is an old method of Wheat culture, and a successful one, having the merit of not only exposing the soil so that it becomes aërated, but of cleansing it thoroughly from weeds and Couch grass. With thorough cultivation and the addition of 15 to 20 tons of manure per acre, no better preparation can be suggested. A crop of Potatos provides an excellent preparation for Wheat, mainly owing to some of the manure used for the Potatos remaining in the soil. Peas, Beans and Vetches are also good crops to precede Wheat, all being members of the leguminous family. A crop of Mangolds preceding Wheat gives the most variable results, mainly owing to the late date of removing the roots, thus delaying the sowing of the Wheat until the middle or even the end of November.

Basic slag will in the future play an important part in the growing of Wheat, especially where sheep are not kept. I have this season seen some remarkable results in the Wheat crop from the use of basic slag. In one 40 acre field, where the soil is sandy loam overlying clay, to satisfy some sceptics one breadth of the distributor was sown with Wheat without the dressing of basic slag. In that area the crop was not worth gathering, while in the field generally, which was dressed with basic slag, the produce was 40 bushels per acre, with good ears and stiff straw. I intend to use this fertiliser for the Wheat crop largely, at the rate of 6 cwt. per acre. I shall distribute the basic slag at the time of sowing the Wheat, harrowing it in previously when preparing the soil for drilling or broadcast sowing the Wheat.

Of all details in the cultivation of Wheat, none is more important than early sowing, and from the third week in September until the end of October is the best time to sow. *E. Molyneux.*

Obituary.

Mademoiselle Caroline Blancard.—The death of this lady, on the 23rd ult., removes from the horticultural world a link with the past. She was the granddaughter of Captain Blancard, who in 1789 introduced the first large flowering Chrysanthemums into Europe from the Far East. She lived for many years in England, and only returned to France shortly before the war. She was in her 80th year, and is survived by her sister, Mademoiselle Augusta Blancard, who is now the only bearer of this most illustrious name in horticulture, and to whom we offer our sympathy in the loss she has sustained.

Madame René Momméja. We very much regret to learn of the death of this lady on the 27th ult. Her husband, a well-known and enthusiastic amateur and cultivator of the Chrysanthemum, has been for many years a successful exhibitor at the Paris shows. He has also done excellent work as a contributor to the Press on the literary and historical aspects of the flower. His article, reprinted in separate form, entitled "Le Chrysanthème au Japon," which originally appeared in the *Journal of the Société Franco-Japonaise*, will be long treasured by those who are interested in the Chrysanthemum.

Answers to Correspondents.

APRICOTS AND GRAPES: *L. B. M.* Long neglected fruit trees trained to walls can seldom be brought into good condition under less than two or three years' careful management. Whole branches should be cut out and the rest retrained, and at the same time all basal growths by which room can be found must be used to form the basis of new branches. Give the ground a good dressing of lime or crushed mortar rubble. Advice concerning the methods to be followed to preserve Grapes from cracking will be found on p. 114.

ASH FROM OAK WOOD FIRE: *J. R.* The ash from wood fires is rich in potash, and therefore valuable as a manure, and especially now that large sources of potash fertilisers are closed. The ash should be kept dry until required for use, as it loses much of its value if exposed to rain. In potting mixtures a 5-inch potful of ash to a bushel of soil will suffice for most plants. About 5 oz. per yard run, given at planting time sets Potatos. Half a pound to the square yard is a safe allowance when preparing beds for sowing or planting Onions is a good dressing. All parts which produce sugar or starch in roots or fruits need liberal supplies of potash. Heavy soils are generally fairly rich in potash when newly brought into cultivation.

AZALEA SPECIES TO GET: *L. G. P.* No doubt this Japanese species would be quite hardy in your Dorsetshire garden, especially in a sheltered position. It needs a slightly warmer climate than that of Kew.

BLANCHING CELERY: *J. J.* If the special paper collars sold for blanching Celery cannot be obtained, a good substitute may be found in stout brown paper. If this is used in the manner described on p. 105 the soil mixed with the sets to kill slugs will not come into direct contact with the plant stalks. Sawdust would not be a suitable material for moulding up Celery as it sets closely when wet, and fungus growth frequently appears in it.

DISEASED POTATOS: *B. R.* Send specimens of the diseased tubers for examination.

GREEN WORM: *S.* If you will forward specimens of the "green worm" we will do our best to identify it and advise you as to methods of effective eradication.

NAMES OF FRUITS: *In the naming of fruits, we desire to oblige our correspondents as far as we can, but the task would become too costly and too time consuming were there no restrictions. Correspondents should observe the rule that* NOT MORE THAN SIX VARIETIES *be sent at any one time. The specimens must be good ones; if two of each variety are sent, identification will be easier. The fruits should be just approaching ripeness, and they should be properly numbered, and carefully packed in strong boxes; cardboard is often smashed in the post. A leaf or shoot of each variety is helpful, and in the case of Plums, Peaches and Nectarines, absolutely essential. In sending Plums, Peaches and Nectarines it should be stated whether they have been grown in a warm or cool house, on walls in the open, or entirely exposed out-of-doors. In all cases it is necessary to know the district from which the fruits are sent. By neglecting these precautions, correspondents add greatly to our labour and run the risk of increased delay and incorrect determination. We do not undertake to send answers through the post, or to return fruits. Fruits and flowering plants must not be sent in the same box. Delay in any case is unavoidable.*

NAMES OF FRUITS: *W. P.* 1, Probably White Transparent; 2 and 3, Worcester Pearmain; 4, Queen; 5, Bismarck.

NAMES OF PLANTS: *T. C.* The yellow-flowered annual is Tagetes patula; the red flower is Lychnis Flos-Jovis, a herbaceous plant; the white flower is probably a Clarkia, but it was received in poor condition for identification.—*A. H.* The double form of Saponaria officinalis.—*W. and S.* Bryophyllum crenatum.—*Elsie Cox.* Chimonanthus fragrans.—*J. K., Oswestry.* 1, Eryngium Oliverianum; 2, Phygelius capensis (Cape Figwort); 3, Senecio tanguticus; 4, Echinops Ritro var. ruthenicus (Russian Blue Globe Thistle); 5, Malva crispa; 6, Fuchsia gracilis.—*B. G.* 1, Diervilla (Weigela) florida var. Looymansii aurea; 2, Polygonum cuspidatum; 3, Clethra alnifolia; 4, Veronica salicifolia; 5, Levcesteria formosa; 6, Cydonia japonica.—*Onion Grower.* The plant which came up in your Onion bed is Bulbine annua, a native of South Africa. The species has been grown more or less in this country for many years, but chiefly in botanic gardens, as its ornamental value is but small. In your case it may have come directly from South Africa, just as American seeds come amongst food seeds (Beans) or amongst poultry food.

PEARS WITH CORRUGATED SURFACE: *B. and W.* We can find no trace of any parasitic organism in the Pears sent. The curious corrugations are due, we believe, to hail, which fell during an early stage in the growth of the fruits and damaged the skin and underlying cell tissue, so that development became uneven.

PRUNING CYDONIAS: *T. W.* The varieties of Cydonia japonica readily adapt themselves to pruning, which should be done in the summer. It is probable that the position your plants occupy is not sufficiently sheltered and sunny to ensure freedom of flowering.

PRUNING SWEET BRIAR HEDGE: *J. R.* If you were to prune the Sweet Briar hedge back to 3 feet from the ground in March the new growth would proceed chiefly from the upper part of the stems, and the base would remain more or less bare. A better plan would be to cut out superfluous growth as soon as the leaves have fallen and bend the principal remaining growths so that they may be pegged down at the base of the hedge, with their points trained upward beyond the peg. By this means you would be able to reduce the hedge to the desired height and obtain a well-furnished base next season.

WORMS IN BOWLING GREEN: *P. P. G.* Water the bowling green with a solution made by dissolving 2 oz. of corrosive sublimate in 15 gallons of water. This will cause the worms to come to the surface, where they can be swept up; as the corrosive sublimate is very poisonous the worms should be burned or otherwise disposed of at once, because if birds eat them they will be poisoned. Lime-water, made by mixing a peck of fresh quicklime in 40 gallons of water and allowing it to stand until clear, is also useful, as a copious watering with the clear liquid will cause the worms to come to the surface, from whence they can be gathered and fed to poultry without harm.

Communications Received.—C. P.—H. B.—D. McB.—H. L.—E. J. E.—J. W. F.—W. W.—Capt. J. S.—R. G.—W. L.—J. C. W.—C. P. R.—J. McD.—S. H., Mesopotamia.

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CONTENTS.

ILLUSTRATIONS.

NOMENCLATURE OF BEANS.

ON the "Carte du Jour" [illegible] Fageolets" or "Haricots Fageolets" on shows that fresh, unripe, shelled Beans will be served; on the other hand, if simply "Haricots," or more usually "Haricots verts" is inscribed, one will get the whole young green pods, which are occasionally put down as "Aguilles" or "Filets." Sometimes, just as in this country "Runner" Beans may be specified on the menu, one meets with more exact names; for instance, in Caen my first meeting with the variety was announced on the menu with its name "Prédomes de Caen." When the term Haricots flageolets is met with it may be that the variety will be the "Haricot flageolet de Laon," which is further dealt with below, but of this there is no certainty, for so many varieties have now been established, and Haricots Flageolets blancs, verts, jaunes, rouges, et noirs (white, green, yellow, red and black) are listed by the seedsmen. In this country the practice of shelling out Beans in the fresh state is comparatively unknown, but I venture to think that it should be popularised, especially in these times, for the food value is not only high in actual substance, but also it probably partakes of the nature of a "green vegetable." In this state, we have no name for the vegetable in our language, and it seems quite advisable to take over the French word—luckily one that is fairly well pronounceable by the British mouth. Before leaving the cookery aspect, I may note that Escoffier (*Le Guide Culinaire*, 1912) is very insistent that if Parsley be used at all with these Beans it should be absolutely fresh.

From the gardener's point of view it is seen that the grouping of the varieties of *Phaseolus vulgaris* (French or Kidney Beans) is determined into two classes, (a) the all-edible "Mange tout" or membrane-free "sans Parchemin," in which the whole pod is eatable up to the full development of the seeds, and (b) Beans for shelling "à écosser" or with membrane development "à parchemin," which can only be eaten in pod form in an early stage of their growth, owing to the hard layer which soon forms, after which they can only be used as "flageolets," or allowed to ripen, when they come under the not very distinctive English title of Haricots (Haricots secs). A further sub-division of each group is made according to whether the variety is climbing ("à rames") or dwarf ("nain"). To whom may be due this grouping, or when it was introduced, I do not know, but Vilmorin, Vercier, and a number of catalogues of French seed firms have adopted it: to me it seems a useful and important practical scheme. Looking through the lists it is seen that very many of the shelling-out varieties are listed as Haricots Flageolets; on the other hand, none of the "eat-all" groups are thus designated. Excepting the waxpods, so far as my small experience goes, for I have transferred my favour for Bean seeds to the Continent, the majority of the varieties offered by our seedsmen are of the membranous type, and, moreover, dark-seeded (e.g., Canadian Wonder). For a shelling-out Bean I prefer a pale-seeded variety, and for whole pods or "mangetout" or "Snap Beans," I believe, in the U.S.A. one that does not become membranous. It is, perhaps, from the habit of growing these membranous Beans that the English cook will persist in cutting them up before cooking, whereby both flavour and food value are reduced. The ambition to be able to recognise the variety of Bean on the table by its flavour gets limited to the knowledge of the sorts that we grow, for at friends' houses the Beans are usually cut up, and the distinctive flavours evaporated.

ETYMOLOGY.—The words Haricot and Flageolet were both born in mystery. "Haricot" was not in use till the 17th century (Littré); old spelling Herigot and more antique Haligot; and probably at first appeared as Fève de Haricot (contradistinguished to Fève de Marais (Broad Bean (*Dict. Lend Fr. VI. Edn.*, Littré says the question then arises whether "Haricot" may not have given the name to "Haricot" (vegetable) or vice versâ, and the evidence of old authors is that the vegetable got its name from the stew, perhaps because the Bean was good to stew with neither or more likely because its appearance was likened to the small pieces of mutton in a "Haricot"; this rather suggests that the original Haricot would have been a red or brown coloured Bean. The following recipe given by Cotgrave (1650), and evidently a translation from an older writer (Ménagier II. V., 14th Century v. Littré), is perhaps worth quoting:

> HAVIGOT. Mutton, or other flesh, chopped small, and boyled with Onions, Parsley, Sage, Time, Hyssop, Savory, Margerom, Rosemary, Pepper, Cloves, Mace, Cinnamon, Ginger, Grains, Saffron, Salt, Verjuice, and Vinegar, and served up with the same broth, and (sometimes) chopped Eggs.

A Beane was that Fabve in French, and French or Romane Beanes were Febves pointes (perhaps Scarlet Runners or Haricots d'Espagne from the spotted or streaked seeds). Febves de Beane, and Fisedes. This last word introduces us to Flageolet. As applied to Beans this does not appear in Cotgrave 1650, or Cotgrave (1705). Thompson whose work is much tinctured by French (1659) gives it as synonym for Early Laon Dwarf Bean, of which the seed is "white, oblong, and neat"; [illegible] Vilmorin (3rd Ed. 1904) (Haricot flageolet blanc) says they are "assez petits, délicats et forme de rognon"; the earlier description perhaps may have owed its name to being somewhat cylindrical and flutelike, though Littré's derivation is from Phaseolus, with the evidence of the Provincialisms Gôney, fajole, fajule; Lyonnaise: Cambuzat, fageole; Faucigny, fajon, fajole; in a word, a corruption of "fageolet," the diminutive of "fagot." Littré (1877), like Thompson (1659), gives it as a special variety of Bean, known also as "nain hâtif de Laon," one of the most esteemed and most commonly grown about Paris. Since then, combined as "Haricot flageolet," it has been applied to a considerable number of varieties, both dwarf and tall, and irrespective of the colour or form of the seeds. Lastly, it may be noted that "Haricots" is applicable to the plant to the seeds, and, as "Haricots verts" to the green pods (Littré).

Mr. Elwes has mistaken my meaning in that shallow planting of the seeds should be restricted to white sorts; I merely mentioned the white sorts in regard to the greening of the cotyledons because the colour shows up well; darker varieties also green early if exposed to the light. The point is, that if early exposure to light is obtained the cotyledons are able to develop chlorophyll early and promote the vigour of the young plant. In regard to his difficulty with ripening, I should suggest that he should confine his attention to early, or forcing sorts, or start the plants in frames and plant out, which may be done with many sorts. Prédome is rather late in podding, but though Thompson (1659) remarks that the tall variety is not well adapted for the climate of Britain, this is certainly not my experience with the dwarf variety: last year we ripened many pounds of seed.

TOW GAY.—Besides the forms of green pods, shelled out immature Beans or flageolets and the dried ripe Beans or "Haricots" (Haricots secs), in the East I met with another mode of utilising Beans called Tow Gay in Malay "Tow" as in "how"), which is a further development of the advice given in *Gard. Chron.*, Aug. 24 1918, p. 75), to soak dried Beans for 12 hours in water. According to many authorities water should be free from hardness, preferably rain-water or water to which a tiny pinch of carbonate of soda has been added, just enough to make a bond with the dissolved lime.

"Tow Gay" is apparently prepared from the seeds of the Mung Bean (P. mungo, syn. P. aureus L. f. (in of the Chinese), and also the Adzuki (P. angularis) of the Japanese. I am endeavouring to obtain further information concerning the varieties, but it will be easy to try some of those which are cultivated in this country.

In case some may like to try this mode of obtaining a fresh vegetable any time during the winter," the following notes may be of service.

The seeds are put thickly in waterproof saucers and covered with about ½ inch of water and kept in a warmish place; when the shoots are about 3 inches long they are thoroughly washed in a strong flow of water, whereby the skins of the seeds are washed away. The sprouts are then either cooked in salted water, drained, and flavoured with sauce (or gravy?), or they may be cooked in a fireproof vessel with oil or fat, and then seasoned with ketchup, yolk of egg, etc.

As I remember, Tow Gay was a very favourite dish, and trials with some of our varieties may be worth while; my idea is to begin with Prédome, and if not satisfactory to try others. D. Bois relates that the Adzuki ripened all its seeds in Savoy, and Piper mentions varieties that ripened in 80 to 100 days in Virginia. Apparently a prize was offered in France for the best hectare of one of this class of Bean. *H. E. Durham.*

ORCHID NOTES AND GLEANINGS.

BRASSO CATTLEYA MIRANDA.

A FLOWER of a very pretty and distinct kind the result of crossing Cattleya Iris (bi- [illegible] Dowiana aurea) with Brasso Cattleya Mrs. J. Leemann (B. Digbyana × C. Dowiana aurea), sent by Frederick J. Hanbury, Esq., Brickhurst, East Grinstead, in whose gardens the plant has flowered for the first time. It proves to be a very desirable new hybrid and in colour and the firm texture of its fragrant flowers a well-defined departure from the ordinary class of hybrid Brasso Cattleyas. The sepals and petals extend over 6 inches, the latter being 2 inches wide; both the sepals and petals are bright canary-yellow, the middle of the inner halves changing to primrose-colour. The broad lip, which shows no indication of constriction in the middle, as in *C. bicolor* and *C. Iris*,

...y fully expanded, the front crimped and fringed and bright magenta rose in colour. The central area is bronzy-orange intersected by chrome yellow lines running from the base. The column is white and not so fleshy as in C. Iris.

MONTBRETIAS FROM EARLHAM HALL, NORWICH.

At the meeting of the Royal Horticultural Society held on August 27 last the group of Mont Morris, and his gardener, Mr. George Henley, deserve heartiest congratulations.

It is only fair to record the fact that Mr. Morris commenced his work of selection with an excellent foundation prepared by Mr. G. Davison, gardener to Col. Petre, Westwick House, Norwich. From some of the choicest Westwick varieties, presented about ten years ago, Mr. Morris and Mr. Henley have raised a very fine strain, and no fewer than seven of the varieties have received Awards of Merit from the Royal Horticultural Society.

FIG. 96.—MONTBRETIA "CAMEO": COLOUR GOLDEN YELLOW WITH RED-BROWN ZONE.

...ordes exhibited by S. Morris, Esq., Earlham Hall, Norwich, was the chief feature of the exhibition. The gorgeous colouring of the flowers, and the elegance of the spikes commanded general admiration. Most of the varieties were home-raised and represented a strain which appears to carry more expanded flowers at a time than is usual. This interesting feature was particularly marked in the varieties Queen Mary, Queen of Spain, Citronella, and Nimbus (see fig. 96), but it was not so evident in the larger flowered forms, such as King Henry VIII. As raisers and as growers of Montbretias, Mr.

TREES AND SHRUBS.

ABIES GRANDIS.

ABIES GRANDIS is supposed to be the tallest Silver Fir in the world, as it makes a tree of 230 to 300 feet high in its native habitat, in Western North America. It evidently thrives in this country, judging from a young tree which I recently saw in the grounds of J. H. Bowman, Esq., Greetham Common, Newbury. This tree was 40 feet high, and had only been planted 15 years, so that the average rate of growth a year, during that period, has been considerably over 2½ feet. It stands in a paddock, in grass, considerably below the level of the adjoining common, where the ground must be fairly rich and moist, but has, doubtless, a gravelly subsoil. The tree is pyramidal in habit and perfect in every respect. The leaves are of a dark glossy-green, arranged in two closely imbricating ranks on either side of the twigs, which have a rather massive appearance on account of the length of the leaves. These are almost as long as those of A. lowiana, but have no stomata on the upper surface as in that species, and that fact may help to account for their rich green colour. *J. F.*

HYBRID SUNFLOWERS.

IN a letter to *Nature*, Prof. T. D. A. Cockerell, of the Colorado University, Boulder, Colorado, U.S.A., writes:—

In crossing the different species and varieties of Helianthus some peculiar results have been obtained. The crosses referred to have all been made by my wife at Boulder, Colorado, and the results may be classified as follows:—

(1) The varieties of Helianthus annuus (including H. lenticularis, regarded by some botanists as a distinct species), when crossed together, produce plants which are as fertile as the parents. In some of the mongrel varieties there is, however, a marked deficiency of pollen.

(2) The annual species of Sunflowers (typical Helianthus), crossed together, are quite fertile, but the hybrids are themselves nearly sterile. H. annuus has been crossed with three species, H. argophyllus, H. petiolaris, and H. cucumeritolius.

(3) The annual species can rarely be crossed with the perennial, but when this occurs the offspring closely resemble one or the other parent species. One such hybrid was recorded in the *Standard Cyclopedia of Horticulture* (Vol. VI., 1917, p. 3284) as between H. pumilis and H. annuus. Renewed study of the living plants this year convinces me that this is an error: the perennial parent was, in fact, H. subrhomboideus. Both species occur here, and Mrs. Cockerell, at the time of making the cross, did not distinguish between them. Morphologically they are especially distinguished by the fact that H. subrhomboideus has underground migratory branches, by means of which it spreads, while H. pumilis is strictly stationary, reproducing only by seed. The hybrid closely resembles H. subrhomboideus (though this was the pollen parent), but is much larger, with larger broad leaves. It has small or short underground branches, but, nevertheless, is stationary. That is to say, the migrators are present, but the plant does not spread by them in all directions as do the true migratory forms. Comparing the details of structure, I found that the ray-florets of the hybrid were quite without pistils, whereas those were well developed (though not functional) in the H. subrhomboideus. However, further investigation showed, to my surprise, that some heads of the wild H. subrhomboideus had the ray-florets wholly without pistils. The involucral bracts of the hybrid are more distinctly pointed than those of H. subrhomboideus. In other cases attempts to cross annuals with perennials have resulted in total failures, as has happened when crossing H. annuus on H. pumilis, in attempts to repeat the cross described above, which was erroneously interpreted. In other cases seeds were obtained from the pollen of perennials used on annuals, and the resulting plants were indistinguishable from the annual parent. Seeds received from Mr. L. Sutton, from England, representing the F. of a cross between the red H. annuus and the perennial H. rigidus, also gave plants entirely of the annuus type.

Babcock and Clausen, in their recent (1918) admirable work, *Genetics in Relation to Agri-*

culture, have (Chap. xii.) discussed those remarkable cases in which the F_2 generation of a cross gives plants resembling the original species crossed, with greater or less fertility. A very ingenious and plausible explanation is given. Collins and Kempton recently found that in crossing two distinct genera of grasses, Tripsacum and Euchlaena, they obtained plants agreeing with the pollen parent, the Euchlaena. They call this patrogenesis (*Journal of Heredity*, Vol. VII., No. 3, 1916). One of the explanations offered by them is that the male nucleus may have developed in the ovary to the complete exclusion of the female, "representing in a way the counterpart of parthenogenesis." It appears quite possible that in some hybrids, and perhaps other heterozygous forms, particular pairs of homologous determiners do not both function or develop, so that in respect to certain characters the organism is simplex, not in the sense of the old "presence and absence theory," but in the sense of not being a hybrid at all in respect to particular features.

FLORISTS' FLOWERS.

PERPETUAL FLOWERING CARNATIONS IN UNHEATED GREENHOUSES

It is a common idea that Perpetual flowering Carnations must have fire-heat during the winter months to protect them from frosts, but this has been proved entirely wrong. Artificial heat is not necessary, and the amount of frost we get in this country will not harm the plants—in fact, many amateurs declare that their plants produce the best results during the spring and early summer if frozen during the winter.

There is no other subject so adaptable for a cold greenhouse, and no plant will produce such generous supplies of bloom during the entire twelve months of the year as the Perpetual (Tree) Carnation when grown without artificial heat. The one great essential is a free circulation of air at all seasons; even in the case of an intensely cold, frosty night, the greenhouse should be ventilated. If the plants are kept hardy they are fortified against frost; furthermore, they are not attacked by any of the common Carnation diseases, which are invariably induced by insufficient ventilation in heated greenhouses. Naturally watering must be done with discretion, and the morning of bright, sunny days is the best time to use the water can, but the plants should be kept moderately dry at the root during very wet or cold weather.

At times such as these the usefulness of flowers is multiplied. Many of us prefer not to grow them for our own pleasure, but produce them for the enjoyment of others, particularly those who have been in the forefront of our country's fight, and the healing influence of flowers, particularly during the dull season, is perhaps only second to that of the doctors and nurses, so that those amongst us who have greenhouses should see that they "do their bit" in this direction. *A. H.*

THE ROCK GARDEN.

STACHYS BETONICA VAR. ALBA

One of the most beautiful rockery plants I know—if, indeed, it should be grown on a rockery—is a dwarf, white-flowered variety of S. Betonica (see fig. 47) which I collected myself at The Lizard some years ago. Its height when passing into fruit is only 5 to 7 inches, and, with a closely-arranged mass of inflorescences, as shown in the illustration, it is both neat and effective. Stachys Betonica is a well-known British plant, and it is of interest to recall that formerly it was regarded as very important in medicine. An old proverb says "Sell your coat and buy Betony," by which it is intended to express the high admiration in which our forefathers held this plant. "He has as many virtues as Betony," is the saying of a Spaniard with whom the herb was in great repute. Antonius Musa, physician to the Emperor Augustus, filled a whole volume enumerating the many virtues of the plant, and it is said to have cured forty-seven different disorders. It was used for gout, for headaches, and was regarded as "most fitting to be kept in a man's house both in syrup, conserve, oyl, ointment, and plaister." In a modern book of Materia Medica the plant is described as feebly aromatic and astringent, but its use in dyspepsia, chronic rheumatism, and one or two other complaints, does seem to be recognised, though it is not official. In addition to its great medicinal virtues Betony was supposed to be endowed with great power against evil spirits, sanctifying, as Erasmus tells us, those that carry it about with them. The beauty of this white form attracts attention and is admired by everyone. The cultivation of the plant is of the simplest, and propagation by division is very easily effected. *E. Irwin Lynch, Botanic Garden, Cambridge.*

FIG. 47.—STACHYS BETONICA ALBA IN THE BOTANIC GARDEN, CAMBRIDGE.

REMARKS ON THE CONDITION OF THE FRUIT CROPS.

See Tables in *Gardeners' Chronicle* for August 3, p. 42.)

(*Continued from p.* 112)

ENGLAND: N.W.

Westmorland.—The blossom on Apples and Pears this year gave abundant promise of a crop, but the flowers faded at once under the destructive influence of the east winds and a plague of caterpillars. Spraying did no good, and hand-picking was only possible on low-growing trees. Apples, therefore, are scarce and there are none Pears. Plums, especially Victorias, are good on some trees. Small fruits are poor. I saw on the 4th inst. trees of Damson Merryweather were covered with bloom, and the fruit set well. *W. J. Miller, Lowther Gardens, Kirkby Lonsdale.*

ENGLAND: S.W.

Cornwall.—The fruit crops are the worst on record. Pears are a complete failure, and so, with very few exceptions, are Apples. Peaches are rather better than was at first expected, but the crop is only half the average. Plums and Morello Cherries are scarce. Strawberries yielded a small crop, the latest varieties being the best. The only full crops were Gooseberries and Raspberries, which were very good. Our soil is on rock, and moisture drains away quickly. *Wm. Andrews, Trewithian Gardens, Truro.*

Devonshire.—This is the worst season for general fruit crops that I remember during twelve years' charge of these gardens. The only varieties of Apples cropping freely are Lord Grosvenor and others of the Codlin family. Scores of trees are not carrying a single fruit, notwithstanding that there was a fair amount of bloom on most varieties. Pears are a complete failure, and the same is true of Plums. Silver-leaf disease has been very prevalent during three past seasons. Victoria suffering badly in this respect. American blight is also making rapid headway in this part of Devon. *F. H. Bolton, Powderham Gardens, Exeter.*

—It is many years since there has been such poor crops generally. There has been an abundance of insect pests. *P. C. M. Veitch, Rood Nurseries, Exeter.*

Gloucestershire.—The fruit crop in this part of the country is a very light one indeed. When the trees were in bloom everything seemed to promise a very heavy crop again this year, but the severe frosts in May, followed by very much bright, dry weather, destroyed all prospects of any crop of fruit. We have no Pears excepting a few Perry Pears. Our soil varies in this district; some is a very heavy loam or clay, other places quite near are light and sandy, but in no case is there any crop of fruit this year. *William Keen, The Gardens, Bowden Hall.*

Crops of Apples, Pears, and Plums in this district are much below the average. In this garden, however, Apple and Pear trees which did not bear fruit last year have fair crops. Plums are an entire failure, although the trees flowered abundantly. Cherries were fine, and all kinds of soft fruit have been good. *C. C. Bolton, Stanley Park Gardens, Stroud.*

Apples and Pears are total failures here. Caterpillars were abundant. There were very few Cherries, and only half a crop of Morellos. Apricots are a failure. We have a few Plums, and a crop of Damsons on some of the trees. The failure of the Apple, Plum, and Pear crops is general throughout this locality. *J. Bunting, Tortworth Gardens, Falfield.*

—The out-door crops of fruit are the worst

I have experienced for many years. Trees that were not laden with fruit last year are not fruiting this year. Owing to the sunless autumn the wood did not get properly matured, and the blossoms were weak. Pears failed to flower. Apples, Plums, Damsons, and Cherries looked promising, and set a good proportion of flowers, but a heavy thunderstorm on May 18, accompanied by hail, and several subsequent sharp frosts at night, destroyed the blossom. Standard stone fruit trees are bare, and only here and there are a few Apples to be found. There are a few Apricots, Peaches, Nectarines, and Plums on wall trees. Morello Cherry trees on a north wall yielded a fair crop. Strawberries and bush fruits bore good average crops. Caterpillars have been very troublesome, and in some instances cleared the trees of their leaves, though drastic measures were taken to destroy them. Our soil is chiefly clay with a subsoil of bluish clay. *A. Chapman, Westonbirt, Tetbury.*

—— Fruit crops in the county are generally disappointing. There was plenty of Plum blossom, but late frost did it serious injury. The blossom on Pears was very scanty. Apple trees in orchards which did not bear last year bloomed fairly well, but the flowers were soon gone, and the trees never looked like setting a crop. Aphis, and the Ermine and Lackey Moth caterpillars have been very injurious. The trees also suffered from drought. This is one of the worst fruit seasons known in this county, and from reports generally there seems to be but little fruit in the whole country. *G. H. Hollingworth, Shire Hall, Gloucester.*

HEREFORD.—The fruit crops this season are poor, the only exception being Gooseberries, which bore a full crop. Apples bloomed well, but severe attacks of Apple-blossom weevil destroyed the majority of the blossom. The varieties that are carrying fair crops of fruit are Bismarck, Rival, Blenheim Pippin, King of the Pippins, Lord Grosvenor, Lane's Prince Albert, Tyler's Kernel, Royal Jubilee, Dutch Mignonne, Emperor Alexander, Golden Spire, Frogmore Prolific, Peasgood's Nonesuch, Golden Noble, Warner's King, Stirling Castle, Charles Ross, Hormead Pearmain, Lord Derby, and Newton Wonder. Pears are quite a failure; there was no bloom on the trees. Of Plums, the only sort carrying a crop is Pershore. Strawberries were poor owing to the drought. The soil is light, on a sandstone formation, and crops need plenty of moisture in spring and early summer. *Thos. Spencer, Goodrich Court Gardens, Ross.*

(*To be continued.*)

THE NARRAS.

ACANTHOSICYOS HORRIDA.

FEW Europeans have seen the remarkable Cucurbitaceous plant known as the Narras, which grows wild in Damaraland. It forms thorny bushes about 4 feet to 5 feet in height, and produces Melon-like, edible fruits in great abundance. The almond-shaped seeds are also edible. The plant is said to bear two crops of fruit a year, which is fortunate, as no other fruit-bearing plant appears capable of existing in Damaraland.

Acanthosicyos horrida obtains its supply of water from a considerable depth, and its roots are of extraordinary length. M. Dupargnet, a French botanist, who lived in Damaraland, measured a root which was 325 feet in length, with many hollow, fibrous branches.

Attempts have been made at Kew and elsewhere to grow this plant in gardens, but always without success. Mr. Naudin stated in the *Gardeners' Chronicle*, of 1886, p. 727, that he was able to grow the Narras with no more success than has been obtained at Kew. He tells us how easily the seeds germinate, but that the plants invariably perished when they were 1 foot to 1½ foot in height.

Six plants were raised in June, 1916, at Kew. The seeds were put singly into thumb-pots filled with sandy soil, and placed in tropical heat, where they soon germinated. Two cotyledons are developed as in Cucurbits generally, and one small lanceolate acute leaf, which is, as a rule, the only true leaf produced. As soon as the seedlings started to form a shoot they were planted in a bed made of sea sand and rough pieces of sandstone, in a sunny house devoted to tropical succulent plants. Five plants became established. Some seeds were also sown in this bed, and these germinated well, so that altogether 32 seedlings occupied this miniature desert.

Where the Narras grows wild heavy dews fall at night, therefore the Kew seedlings were syringed freely. Plenty of air was admitted when weather permitted, and the plants grew well for a time. The bed was well watered on several occasions, care being taken that the water did not reach the neck of the plants.

Twenty-nine healthy, vigorous seedlings lived until Christmas, 1916, but during the first week

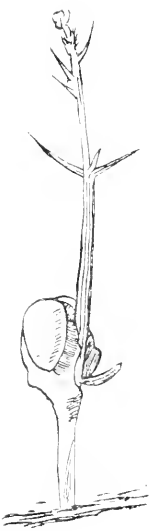

FIG. 46.—SEEDLING OF NARRAS (NAT. SIZE).

of January, 1917, several collapsed suddenly, and by the end of the month only seven remained alive. Two of these plants had stems over 2 feet long, and several branches. In the fourth week of February these two specimens died suddenly, and in January, 1918, all the others perished.

Death in nearly every case seems to have been due to excess of moisture. On the neck of the root a growth is formed which may be called a little appendix (see fig. 48). It contains a drop of liquid (sap), and this may have a bad influence at a time when transpiration is at its lowest, as it must be in short, dark, and moist winter days. We performed a surgical operation on two of the plants by cutting away the "appendix," but although they lived longer than most, they died before February, 1918.

It might be possible to grow and fruit Acanthosicyos horrida in Europe, and if not at Kew, perhaps in places where the winters are more sunny and less damp. Or it might be successfully grown on a commercial scale in the West Indies, at Antigua, for example, where the climatic conditions might suit it. *A. Bees, Royal Gardens, Kew.*

The Week's Work.

THE ORCHID HOUSES.

By J. COLLIER, Gardener to Sir JEREMIAH COLMAN, Bart., Gatton Park, Reigate.

Cattleya, Laelia, and their Hybrids.—During the present month many plants of these genera that have recently passed out of flower will commence to push roots from the base of their pseudo-bulbs, particularly such as Cattleya Warscewiczii (gigas), C. Warneri, C. Hardyana and their many hybrids, and any that are in need of new rooting materials should be given attention. The same remark applies also to such Laelias as L. purpurata, L. tenebrosa; L.-C. elegans and their hybrids. I do not advocate unnecessary repotting of these plants at this season, but it is generally known that where numbers are grown they are not all ready to be dealt with at the same time. Repotting should be done when it is seen that new roots are developing from the new pseudo-bulbs or leading growth. These roots in every case should have sufficient space to grow inside the rim of the pots. Therefore, in giving the plant a larger receptacle, let it be of sufficient size only for two seasons' growth. When the plant has to be removed from the pot, the old, useless pseudo-bulbs, and especially those that have no leaves, should be cut away. Ample drainage must be provided. Pots which are to contain moderate sized plants should be filled to about half their depth with clean crocks, whilst for larger specimens a greater depth of drainage should be used. When repotting plants of the long bulbed section, which includes L.-C. elegans and L. purpurata, it is important that the plants be made firm by tying one or two of the pseudo-bulbs to neat, strong stakes. After being repotted the plants should be afforded only sufficient water at the roots to prevent shrivelling. Some plants of Cattleya Mendelii, C. Mossiæ, C. Schröderæ, and C. Trianæ have ceased to grow, and these should receive less water at the roots than hitherto. They should be exposed to all the light possible, and allowed plenty of ventilation; this treatment will assist the newly formed pseudo-bulbs to mature, and induce the plants to make many roots, and prevent premature growth. If any of these plants have grown too large for their pots, and are likely to suffer for want of rooting space, they may be placed into larger receptacles, but care must be taken not to disturb the roots more than is necessary. Merely break the pots and take away as much of it as possible, without interfering with the drainage. Then place the mass of soil and roots in a larger pot of suitable size. Many Cattleyas, Laelias and hybrids that flower in the autumn, such as C. Wendlandii, C. Portia, C. Mantinii, Laelio-Cattleya Tiresias and others that have finished their growth, should be kept rather drier at the root, affording only sufficient water to keep the compost moist. The flower-sheaths should be watched daily, and immediately the flower-spikes are observed pushing up at their base a slightly increased amount of water should be given, the supply to be again reduced when the flowers open. In many species and hybrids of Cattleyas and Laelias that have finished their growths it will probably be found during damp weather that the outer sheath that encircles the new pseudo-bulbs has become soft and sappy, and clings slightly to the pseudo-bulb, excluding the air. As this condition often causes the pseudo-bulb to rot, the sheath should be slit open from the top to the bottom. Keep the plant dry for a few days and reduce the amount of atmospheric moisture; this treatment will, in most cases, reduce the trouble.

THE KITCHEN GARDEN.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

Cucumbers. — The time has arrived when direct syringing of Cucumbers must be discontinued, but the necessary atmospheric moisture must be provided by other means, and at the same time the amount of bottom heat should be

increased. If young plants are still awaiting the removal of other plants, the latter should be cleared out as soon as possible, as plants that have been bearing for some months will not be worth keeping longer. A fair amount of fire-heat will be necessary to bring the fruits to perfection; these should not be allowed to grow so large as to exhaust the plant's energies. Lightly top-dress the roots as required with some of the compost recommended in the calendar for August 30, and use tepid water only at the roots.

Mushrooms.—Enough manure having been collected for the bed and well turned until thoroughly mixed and sweetened, it should be rammed into the beds as firmly as possible. But before proceeding to make the bed, let the house have a thorough cleansing and airing afterwards; also see to any repairs that are necessary. After the bed is made insert a thermometer, and when the heat declines to 85° insert the spawn just under the surface, about 9 inches apart, in pieces about 2 inches square. The surface should then be made firm and cased over with about 1½ inches of fine loam and again made firm with the back of a spade.

French Beans. — Seeds of French Beans which were sown in pots in the open to obtain plants for housing when frost threatens should be got under cover, otherwise their usefulness will be seriously impaired. Small batches are of little service, and not fewer than fifty 8 or 9 inch pots should be sown at intervals of three weeks. If pods are required soon the pots should be placed where the night temperature seldom falls below 60°, for Beans in pots require plenty of heat, light, and moisture. Not until the pots are well filled with roots will much water be required; liquid manure may be applied with advantage when the plants have arrived at a bearing stage. Thin the seedlings to about six in a pot, and support the growths with Birch twigs.

Cauliflowers. Where hand-lights and cold frames are available, Cauliflower seedlings should now be under cover. Unless the ground is very wet the plants should be well watered and kept close for a day or two until they are well established, when an abundance of air should be given whenever the weather permits. Dibble the plants out about 4 inches apart, and make them firm in the soil. Grow them near the roof-glass, and see that they are well supplied with water, but they must not be coddled. Slugs are very harmful to Cauliflowers, and a close watch must always be kept for these pests.

Cabbages. Fill all gaps in the rows of Cabbages and finish the transplanting of others in firm, clean ground that has not been recently dug. Remove all small, weak seedlings in the seed-beds to give space to those left, treading the soil about the plants. These Cabbages will be useful for planting next March and April, and will form a succession to those planted now. Keep the hoe at work constantly between these and all other crops to encourage growth while the open weather lasts.

Tomatos.—If not already done, the remainder of the out-door Tomato fruits should now be cut and placed under glass to ripen, as slight frosts and heavy rains would cause them to crack or rot.

FRUITS UNDER GLASS.

By W. J. GOSS, Gardener to Mrs. DEMPSTER, Keele Hall, Newcastle, Staffordshire.

Strawberries in Pots. The continued wet weather is not suitable for the ripening of the crowns of Strawberries, although the plants grow apace, and apparently revel in moisture, which no doubt accounts for their exceptional cleanliness and freedom from red spider. Mildew has to be guarded against during a spell of such changeable weather; it is therefore advisable to dip the plants in or syringe them occasionally with soapy water in which a little sulphur has been dissolved. If the plants are given more space the quicker will the crowns mature. Keep the pots free from weeds, runners, and worms, although the last should not be troublesome if the pots are standing on a well soaked ash bottom. Weak stimulants at a gradually increasing strength should be given the plants when the pots are full of roots.

Muscat of Alexandria Grapes. — Where Muscat Grapes are ripe, or nearly so, gradually but well thin the laterals to allow more light and air to enter the bunches. Although a little fire-heat is necessary in dull, wet weather to keep the house dry, an excess would cause the berries to shrivel directly the leaves begin to fall; by freely ventilating the house in fine weather and gradually lowering the mean temperature, they should keep in good condition for a long time. The bunches should be examined frequently, and any decaying berries or foliage removed, otherwise the whole bunch may soon be affected. Should the borders need watering, let this be done early in the day, so that all surface moisture will have evaporated before night.

Young Vines. Afford liberal treatment to all young Vines, and any that are still in growth probably Black Hamburgh should be hastened forward by using a little warmth in the pipes. Those that have completed their growth should be divested of all laterals up to the primary point, unless they have lost all the main leaves, in which case it is advisable to allow a few leaves to remain on the shortened laterals to perfect buds for next year.

THE HARDY FRUIT GARDEN.

By JAS. HUDSON, Head Gardener at Gunnersbury House, Acton, W.

Root Pruning Wall Plums. Certain varieties of Plums are more predisposed to make luxuriant growth than others. The most vigorous perhaps, are those of the Reine Claude section, as, for example, the Transparent Gage, Reading Gage, Althan's Gage. These are amongst the very best of all dessert Plums, and it is worth every effort to render the trees fruitful. As soon as the fruit is all gathered it will be advisable to do at least a little root pruning. Fresh soil need not be used. Proceed first by carefully tracing out the position of the roots, searching especially for any that are growing downwards into the subsoil. Plums these often root more so than the others, and it needs to push a fork pretty wide under the central part of the tree to prevent any roots taking the same course again. In the root pruning carefully, and if there be a deficiency of fibrous roots make a few incisions in the larger roots with a sharp knife. Do not use manure to trees that are too luxuriant in growth already. Reduce all sappy wood on the trees, and water the roots once to settle the soil, but first make the ground firm.

Choice Dessert Plums. As the planting season approaches, I would advance the claims of a few varieties of first-rate dessert Plums. I would recommend Kirke's, one of the finest for flavour, and a good cropper; Oullins' Golden Gage, an excellent early Plum, of fine quality; Ickworth Imperatrice, possibly the latest of all choice dessert varieties, and most useful for dessert purposes up to the end of October, and even into November, for use during the shooting season; Coe's Golden Drop, which is better known than many others, and a good companion to the preceding sort; Reine Claude de Bavay, a September Plum of a fine flavour, and one that keeps well; and Early Transparent Gage, one of the most prolific of this section. These half-dozen sorts are worthy of planting in any garden, and, moreover, are also suitable for planting against a wall with a glass coping.

Late Keeping Plums. Those who are fortunate enough to possess good crops of Coe's Golden Drop and Ickworth Imperatrice Plums will do well to gather the remainder of the fruits. Fold each perfect fruit in tissue paper and suspend it in a dry fruit room.

Figs on Outside Walls. — Reduce all superabundant growth on Fig trees against walls; first remove all sappy, green wood (unless any is needed for extension), and then see what more can be spared. If fruits are still on the trees expose them to all the sunshine possible. They may be gathered a few days before they are ripe and their ripening finished under glass. I am glad to find that those growers who persevere with the Fig in the open have been rewarded this season with a good crop. More growers should cultivate this fruit, especially those with the advantage of a warm, sunny wall. Depend upon Brown Turkey rather than any other variety. Prepare the border this autumn, but do not plant until the spring, say at the end of March.

PLANTS UNDER GLASS.

By E. HARRISS, Gardener to Lady WANTAGE, Lockinge Park, Berkshire.

Coleus thyrsoideus. — This plant requires plenty of stimulants during the final stages of growth in order to obtain fine spikes of flowers. Plenty of air must be admitted to the plants when the weather is warm and genial, and a little air should be admitted at the top of the house during the night. A minimum temperature of about 56° will be ample until the plants are in flower. It may then be reduced by 5°.

Violets. The work of planting Violets in frames should be no longer delayed, as it is a great advantage to get them well established in the new soil before the winter. Plant firmly and as near the roof-glass as practicable. When the roots have recovered from the check caused by disturbance let the plants have an abundance of air, removing the lights altogether when ever the weather is favourable.

Cineraria.—Shift the latest Cineraria plants into their flowering pots as soon as they are ready. Give them a good, substantial compost and pot firmly. The pots should be stood on a cool bottom and the plants kept in cool conditions throughout the autumn and winter, using fire-heat only to keep out frost. Fumigate the plants occasionally to keep them free from aphis.

Rhododendron indicum. It is no longer safe to leave Indian Azaleas out of doors. Place them in a light, airy structure, and let them have an abundance of air at all times till there is danger of severe frost. Before shifting them indoors lay the pots on their sides and thoroughly drench the shoots with an insecticide as a precaution against red spider.

THE APIARY.

By CELONUS.

Making Hives Watertight. In order that stocks may go through the winter safely, it is essential that the hives should be quite weather proof, for dampness is the prime cause of dysentery. The best method is to remove all chipped paint from the hive by scraping; rub down the surface with glass paper, and fill all cracks with putty or white lead. The roof should be painted, and while the paint is wet, tightly stretch over a piece of calico and tack it on round the edge of the hive with thin laths, then give several coats of paint. The rest of the hive should be painted, remembering it is not the amount that is applied at each coating, but the working of the paint into the wood at each application that matters. To paint thickly is to waste material. To those who wish to make their own paint the following hints will be helpful, and I may add it is best to make your own. The following will make sufficient to paint an ordinary 10-framed hive with one coat. Take one pound of white lead and mix thoroughly with equal quantities of linseed oil and turpentine, adding the liquid slowly as the white lead requires more to mix it to a workable consistency. For the first coat it may be made thinner than the succeeding ones. Since the weather is very unsettled now it would cause the paint to set quicker, and also make it harder, if a tablespoonful of gold size be well stirred into the paint. Those who do not desire white painted hives may produce stone colour by adding yellow ochre and burnt umber until the required tint is reached, and a slight quantity of sienna will result in a stone colour of a rich tint. To make lead or slate colour, stir in lamp-black. This colour is often desired, as it does not show dirt so readily as other tints, and may be used for roofs only if desired. Boiled oil may be used but it must be remembered that it blisters very readily. When the paint is well mixed strain through a piece of old stocking to produce paint of an even consistency and colour; further it will produce a better surface after straining, as all grit and other foreign matter will be removed.

EDITORIAL NOTICE.

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

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

Special Notice to Correspondents.—*The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.*

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

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, *and as early in the week as possible, and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.*

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

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 54.0°.

ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, *Wednesday*, September 25, 10 a.m.: Bar 29.9, temp. 66°. Weather—Bright.

SALES FOR THE ENSUING WEEK.

TUESDAY and WEDNESDAY—
Rhododendrons, Hardy Heaths, &c., at the Sunningdale Nurseries at 12 o'clock each day.

THURSDAY—
Sale of Bulbs at 67-68, Cheapside, E.C., at 1 o'clock.

The Fuel Problem.

Since we made the announcement in the issue for July 6 that the Controller of Coal Mines hoped to be able to furnish an allowance of fuel for the heating of glasshouses in private establishments, the coal problem has become more acute, and fuel may or may not be forthcoming. As it is no longer safe to allow tender plants to remain unprotected, they should be housed for the winter at the earliest opportunity, and the measures we recommended in the former article on the subject—some of which we again refer to below—adopted.

The decision to include wood in the control is unfortunate, as otherwise many could no doubt have supplemented their coke or coal allowances by obtaining wood locally. The situation must be faced. Coal, says Marshal Foch, is the key to victory, and, as all the Allies must be supplied from this country, it is the duty of everyone to save coal, however inconvenient they may find it, either in the house, in the garden, or in the workshop.

The allowance for commercial establishments is about 20 per cent. less than the average consumption for the past three years. Market gardeners and nurserymen who employ artificial heat for forcing, will find it difficult to manage with three tons of coke or coal instead of four. They at any rate do not burn fuel extravagantly, whatever may be done in private establishments, and they will not, therefore, be able to reduce their fuel consumption by a fourth without considerable sacrifice of income. In other words, they will be heavily taxed by the new fuel order.

In private gardens there is less need for anxiety. Fire-heat for vines, Peaches, and other indoor fruits will not matter until the stress is ended; good crops of Grapes and Peaches have been grown in houses this year without the aid of artificial heat. Ordinary decorative plants will probably have to be either reduced in number or consigned to the rubbish heap. This, however, need not be done at once. Many plants will endure a low winter temperature with little loss of health. By keeping the soil and atmosphere fairly dry even tropical plants may be preserved in unheated glass structures. Careful management of the ventilators and outer doors will also be found of material aid in maintaining a safe temperature in cold weather. Every gleam of sunshine should be caught, and at night the roof-blinds should be let down. By lighting a fire in the evening for an hour or two and warming the pipes, an ordinary greenhouse may often be made frost-proof. Frames can be covered with bracken, old straw, hay, or any material that will help to keep out frost. Gardeners need not hold up their hands in despair and say all is lost because fuel is scarce. There are other means whereby tender plants may be preserved from injury by cold.

It is surprising how many plants are able to withstand a lower temperature than we have been accustomed to provide for them. They do not grow as well in a low temperature, but they will keep alive through the winter, and when summer warmth arrives they start, as a rule, into vigorous growth, after a spell of what may be called winter rest. Our advice is, therefore, do not remove or throw away greenhouse plants because artificial heat for them is no longer available, but let them remain, and by the adoption of some such treatment as is here suggested, endeavour to keep them alive.

The Orchid collections, of which there are many of great value in this country, must be preserved somehow. The plants may be wintered safely in temperatures lower than is customary. We know growers who have decided to reduce their Orchid house temperatures by as much as 10° when the weather is trying. This can be done with safety, provided the atmosphere is kept dry. In nature, most plants are subject to extremes of temperature, and fortunately they are so constituted that they are able to bear it.

Village Clubs Association.—Under the chairmanship of Sir R. HENRY REW, and with an influential general committee which includes the Right Hon. R. E PROTHERO, M.P., Sir A DANIEL HALL, the Rt. Hon. F. D. ACLAND, M.P., and Lord HENRY CAVENDISH-BENTINCK, the Village Clubs Association has been formed for the purpose of promoting the establishment of clubs in rural villages throughout England and Wales. The principles upon which an Associated Village Club must be founded are as follows: (1) It should be a centre of social activities and of all forms of physical and mental recreation; (2) it should be self-supporting and free from the elements of patronage; (3) all inhabitants of the village, without distinction of class or opinion, and, when practicable, of both sexes, should be eligible for membership; and (4) the entire control should be vested in a Committee elected by the members. The Association will assist in the formation of Village Clubs on these lines and take such action as may be necessary to form a Club in every suitable village. Full particulars as regards membership and the work of the Association may be obtained from the hon. secs., Mr. A. GODDARD, 12, Great George Street, Westminster, and Mr. GEORGE DALLAS, 32, Charing Cross Road, London.

Women Gardeners' Wages at Kew. — The women gardeners at Kew have followed the example of the women 'bus conductors and others by protesting against the difference in their wages and those of the men, including labourers. The present rates are, including war bonuses, for men 43s. and 44s., for women 38s. 6d. The women replace gardeners who have enlisted, and they are expected to perform the same duties. They are trained gardeners, and we believe their work is satisfactory. The few young men now employed at Kew as journeymen gardeners are paid at the higher rate. If the cost of living is considered the women have a good case, as they are generally charged more for board and lodging than men. We hope the women at Kew will be successful in their appeal for fair treatment. Boys of fourteen, fresh from school, are now paid 15s. per week at Kew. The working hours now are 6 a.m. to 5 p.m. in summer; and 8 a.m. to 4.30 p.m. in winter, with two Saturday afternoons in three free.

More Bees.—Interest in bee-keeping is stated to be reviving rapidly, due, no doubt, to the decreasing virulence of the Isle of Wight disease. Many bee-keepers have patriotically increased their colonies for distribution to those anxious to keep bees but who find a difficulty in obtaining stock. Owing to the unfavourable season in certain districts, these nuclei and late swarms will need attention if they are to survive the winter. Experiments made during the past three years suggests the possibility of the production at an early date of a strain of bee in this country practically immune against the Isle of Wight disease. The importance of the bee to the fruit-grower is widely recognised.

Horticultural Club.—The Committee has made arrangements to continue the joint tenancy of The Farmers' Club, 2, Whitehall Court, Westminster, and will inaugurate the winter session by a members' lunch at 1 p.m. on Tuesday, October 8, in the dining-room in the Club building. Representatives of the Committee will be present to meet the members and afford them opportunity of inspecting the Club's new quarters. Whitehall Court is situated at the back of the War Office, Whitehall Place, Westminster.

Gardeners and War Service.—In a circular letter the Local Government Board calls the attention of the tribunals to the importance, as a part of the general policy of food-production, of maintaining the kitchen gardens of private households. "Exemption should," says the circular, "generally not be refused to an experienced kitchen gardener whose exemption is found to be essential for the production of large quantities of necessary food supplies. Before, however, granting exemption in any case the tribunal should satisfy themselves (a) that the principal and usual occupation of the man is, and has been for a considerable time, that of a kitchen gardener; (b) that most of his time is spent in raising necessary food supplies, and that the quantity raised is sufficient to warrant exemption; and (c) that, unless he is of low medical grade, a suitable substitute could not be obtained for him or other arrangements could not be made, with effort, for the essential part of his work. If a man is engaged partly on kitchen

gardening and partly on other work which is not of national importance, exemption should, when reasonable, be granted on condition that, in addition to his ordinary work as a kitchen gardener, he devotes a specified time to other essential work, particularly, where opportunity offers, to other kitchen gardening or agriculture. The above recommendations do not apply to men who cultivate gardens or allotments in their spare time." Agricultural vouchers have in some cases been mistakenly given to men engaged in kitchen gardening. Any application for the exemption of a man from whom an agricultural voucher so given has been withdrawn is to be entertained, although made out of time. National Service representatives have been instructed that any necessary consent shall be given in such cases.

War Items.—As a result of a fowl exhibition the Cox Green and District Horticultural Society has presented an Ambulance Motor Car, together with a sum of about £70, to Maidenhead Red Cross Hospital. The presentation was made by the President of the Society, F. I. FORD, Esq., who congratulated Mr. T. BEDFORD and his Committee on the success of the exhibition.

—— We deeply regret to learn that Sergt.-Major SEARLE, son of Mr. ALFRED SEARLE, Larkenshaw Gardens, Chobham, Surrey, has been killed in action after 3½ years' active service in France.

HOME CORRESPONDENCE.

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

Blanching Celery. Has anyone tried the paper as a substitute for the paper collars that used to be sold for blanching Celery? Ordinary brown paper, especially of the quality sold nowadays, soon rots and becomes worse than useless for the purpose, so it seems to me that the washable wall papers should, when cut into suitable sizes, be ideal for blanching Celery. Almost all house decorators have odd rolls on hand left over from decorating, and these remnants they used to be glad to sell cheaply; though both are cheap nowadays.—*H. C. Bartlett.*

A Heavy Potato Crop (see p. 121). Last season I planted one peck of sets of Sutton's Edinburgh Castle Potato and the resulting crop was 5 cwt. of good tubers. This year the Hertford Horticultural Society organised a Potato competition, and for it I selected 30 sets of Edinburgh Castle, and lifted a crop of 2 cwt. of tubers therefrom, one root weighing 15 lbs. All the tubers were sound and of good average size, free from disease; they cook splendidly. The ground was trenched early in the spring, and well manured, and a dressing of wood ash was applied before planting, but no artificial manure was used.—*W. Stephenson, Bircham Newton Gardens, Hertford.*

Inequality of Yield, per Set Planted, of Potatos. Inequality of yield exists, when conditions, such as soil, situation, and methods of cultivation, are as far as possible exactly the same, and it would appear to be caused by some quality or attribute in the set or tuber itself. When the sets are placed in boxes for sprouting the sprouting is uneven, as to time and quality of the sprouts, indicating differences in the sets themselves. Do any advanced growers plant only the set with the strongest sprouts and discard those that are weaker? The custom here is to plant all the sets, except the few that might happen to be blind.—*H. Bostock, The Oaklands, Rowley Avenue, Stafford.*

Potato Spraying.—The booming of Burgundy mixture by the Food Production Department has been conducted in a manner which is hardly fair to the manufacturers of other fungicides. No doubt the manufacturer's ultimate aim is profit, but, after all, he does his best for the grower, if only because success lies in that direction; and he has sunk his capital in, and gives his time to, his business. Is it right that a public department should use the money of the taxpayer to disseminate statements calculated to injure this business? The chemical speculations and rhapsodies of mycologists and *cidevant* horticultural lecturers call for no comment, but statements of supposed facts are sometimes made which, to say the least of it, are unwarranted. One of these has been brought to my notice more than once; it is to the effect that the basic sulphate of copper, when reduced to the form of a paste—now known as Bordorite—loses its adhesive properties, and is much inferior in this respect to freshly made Burgundy or Bordeaux mixtures (see Dr. A. S. Horne, in *The Fruit Grower*, April 4, 1918). Such a statement was quite unjustifiable, because up to that time no determinations had been made, or, at any rate, published, of the relative adhesive powers of the substances in question. As there were reasons for supposing that the facts might really be the reverse of those stated, an investigation of the matter was undertaken at Wolverne. Nine plots of Potatos, of one twelfth of an acre each, were sprayed on the same day with Burgundy mixture, Bordeaux mixture, and Bordorite, each of three different strengths, but of strengths such that in each case the three substances contained the same amount of copper; this amount was equivalent to 20 lbs. of crystallised copper sulphate to 100 gallons with the strongest washes, 10 lbs. with the intermediate ones, and 3½ lbs. with the weakest ones. The plots were first sampled one week after the spraying, taking, for the purpose, one leaf from every plant in each plot (except from the plants in the outside rows); the rainfall during the week had been 0.17 inch. A second sampling was made one month after the spraying, the rainfall having then amounted to 0.76 inch. The relative amounts of copper found on the leaves, as compared with that in the case of Burgundy mixture, expressed as 100, were:—

	After 1 week.			After 1 month.		
	20 lbs.	10 lbs.	3½ lbs.	20 lbs.	10 lbs.	3½ lbs.
Burgundy	100	100	100	100	100	100
Bordeaux	108	103	122	91	101	154
Bordorite	121	139	204	150	111	125

Thus, in every single case the adhesiveness of Bordorite is greater, generally much greater, than that of Burgundy mixture, and in five cases out of six, greater than that of Bordeaux mixture; whilst a comparison of Burgundy with Bordeaux mixture gives a superiority to the latter in every case but one, though the superiority is generally not a large one. The behaviour of these substances is in accordance with conclusions based on a consideration of their nature. In every case the ultimate deposit on the leaves is in the form of the carbonate or, rather, a carbonate of copper; with Burgundy mixture it is deposited on them initially as carbonate: with the other two, as basic sulphate, which becomes converted into carbonate; and such conversion *in situ* implies a much finer and more adherent deposit than when the carbonate is applied to start with. The superiority of Bordeaux over Burgundy mixture in this respect is, however, reduced by the presence of the gross particles of excess of lime in it (soon becoming converted into chalk), which are easily knocked off, and, of course, carry with them a considerable amount of the copper, reducing its adhesiveness nearly to the level of that of Burgundy mixture.—*Spencer Pickering.*

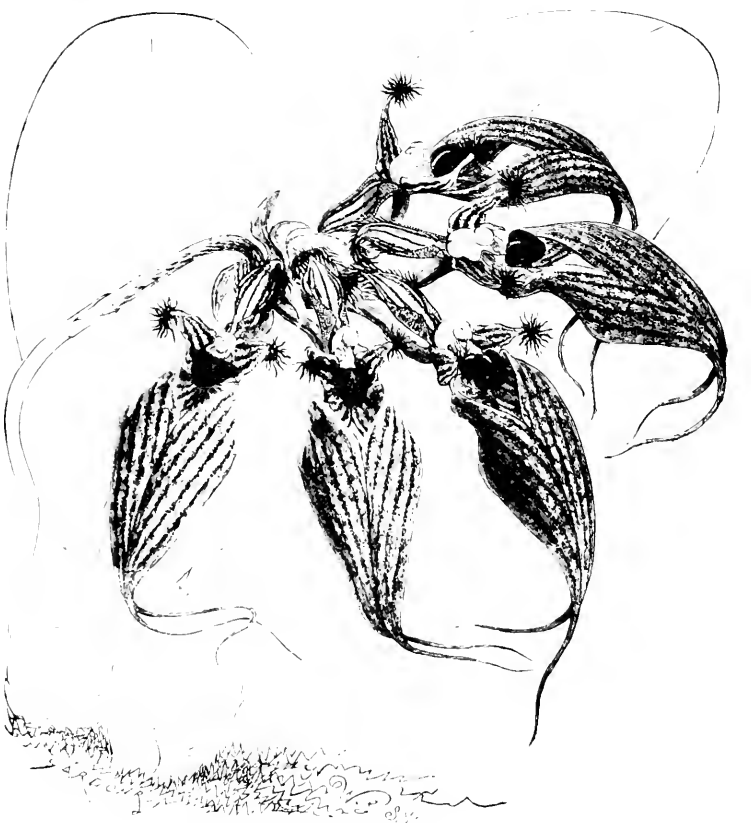

FIG. 91.—CHLOROPHYTUM ORNATISSIMUM.
(See p. 135.)

SOCIETIES.

ROYAL HORTICULTURAL.

Scientific Committee.

SEPTEMBER 10.—*Present* Mr. E. A. Bowles, V.M.H. (in the chair), Messrs. E. J. Allard, W. Hales, J. Fraser, and J. W. Odell.

Potato Wart Disease (*Sorosporium scabies*).—Mr. F. J. Froghrook attended and exhibited Potatos affected with wart disease. It was pointed out by the Committee that the disease was notifiable, and every effort should be made to destroy the affected tubers on the Leyton Allotments, where the outbreak had occurred.

Fasciated Maize. — Mr. A. T. Johnson exhibited a spike of Maize showing fasciation with male and female parts reversed. A similar exhibit also came from Mr. Fraser.

Larix Kaempferi.—A fruiting branch of this Larch, taken from the original imported plant, was sent by Mr. G. Paul. The specimen was well covered with small, green, Artichoke-like cones.

Lycium chinensis.—Mr. Odell showed a branch of this Chinese Box Thorn bearing numbers of coral fruits. It was grown in the London area, and was considered by the Committee to be the variety megistocarpum.

SEPTEMBER 24.—The meeting held in the London Scottish Drill Hall on this date was unusually well attended, and there was a very pleasing briskness about the whole of the proceedings. The exhibition was given over very largely to vegetables staged in competition for prizes offered in 48 classes, with several splendid non-competitive displays, including one from EUSTACE PALMER, Esq., Sherfield-on-Loddon, Basingstoke, to whom a Gold Medal was deservedly awarded.

Orchids were very gay, but comparatively few were shown. Trees and shrubs were fairly prominent. Dahlias, in gorgeous colouring, were plentiful, and there were a few hardy border flowers.

The Floral Committee granted one Award of Merit and seven Medals; the Fruit and Vegetable Committee recommended one Award of Merit and three Medals; the Orchid Committee granted two Awards of Merit and two Medals. The joint R.H.S. and National Dahlia Society's Committee selected fourteen new Dahlias for awards from a bewildering number of novelties.

Floral Committee.

Present: Messrs. H. B. May (in the chair), G. Reuthe, John Heal, W. Howe, G. Harrow, A. Turner, J. W. Moorman, C. Dixon, W. J. Jones, Chas. E. Pearson, W. P. Thomson, W. J. Bean, John Green, Sydney Morris, E. A. Bowles, Jas. Hudson, C. R. Fielder, J. F. McLeod, R. C. Notcutt, and John Dickson.

AWARD OF MERIT.

Aster Robinson, V.C.—The group of useful double Michaelmas Daisies has been enlarged by this new-comer, which is erect, free-flowering, and has shapely blooms of a clear medium blue colour. Shown by Mr W. WELLS, junr.

GROUPS.

Two groups of Roses added fragrance and beauty to the general display. The Rev. J. H. PEMBERTON staged varieties of his own raising, including a new pale apricot-yellow seedling named Miriam (Silver Banksian Medal). Mr. ELISHA J. HICKS had a charming group of Roses, wherein Princess Mary and Chas. E. Shea were prominent varieties (Silver-gilt Banksian Medal). In Mr. G. REUTHE'S display of hardy and semi-hardy plants we noticed Kirengeshoma palmata, with a yellow, pendulous Abutilon-like flower, and a cluster of flowers of Eucalyptus ficifolia (Bronze Flora Medal.) Mr. W. WELLS, junr., contributed a fine lot of Delphinium spikes (Silver Banksian Medal); Messrs. J. CHEAL AND SONS staged fruiting and bright-foliaged trees and shrubs and "Star" Dahlias (Silver Flora Medal); Mr. L. R. RUSSELL put up a first-rate group of standard and bush specimens of many varieties of tree Ivies (Silver Flora Medal); Messrs. H. B. MAY AND SONS grouped Salvias and Veronicas with various Ferns (Silver Flora Medal); and Messrs. PIPER AND SON staged various shrubs, notably Corokia variabilis and Berberis Gagnepainii, with hardy Cyclamens (Silver Banksian Medal).

Polygonum campanulatum, exhibited by C. SCRASE-DICKINS, Esq., Coolhurst, Horsham, is a useful hardy plant, as it flowers in autumn as well as in summer.

Orchid Committee.

Present: Sir Jeremiah Colman, Bart. (in the chair), Messrs. Jas. O'Brien (hon. secretary), Frederick J. Hanbury, R. A. Rolfe, J. Wilson Potter, Arthur Dye, W. J. Kaye, C. J. Lucas, Walter Cobb, S. W. Flory, W. H. Hatcher, J. Charlesworth, Fred Sander, H. G. Alexander, E. R. Ashton, Pantia Ralli, J. Cypher, and J. E. Shill.

The chairman referred with sorrow to the death of Mr. Eric H. L. Davidson, a member of the Orchid Committee, who was killed in action in France on August 27 last.

AWARDS.

AWARDS OF MERIT.

Laelio-cattleya Ivanhoe (*C. Dowiana aurea* × *L.-C. eximia*), shown by Mr. J. E. SHILL, The Dell Gardens, Englefield Green.—A large and handsome flower with bright rose-coloured sepals and petals. The broad lip is crimped at the margin and coloured deep ruby-crimson, the colour extending to the side lobes and merging into light violet. The disc of the lip is tinged with yellow, into which gold lines run from the base.

Cattleya King Victor (*Rhoda* × *Octave Doin*), from Messrs. FLORY AND BLACK, Slough.—A fine hybid, shown with its first flower, and which should develop still greater beauty, as C. Dowiana occurs thrice and C. Mendelii, C. Warscewiczii and C. bicolor each once in the parentage. The sepals and petals are rosy-mauve, freckled on the outer halves, with cream colour; the finely-expanded, crimped lip is claret-crimson with well-defined gold lines from the base.

GROUPS.

Messrs. STUART LOW AND CO., Jarvisbrook, Sussex, were awarded a Silver-gilt Flora Medal for an excellent group composed principally of hybrids raised by the firm, and including a selection of Cattleya Hardyana varying from the white-petalled and blush-white forms to good representatives of the dark-coloured type. Among Cattleyas good forms of C. Warscewiczii and C. Lodd.izesii (with twelve flowers on a spike), and the yellow C. Baron Delbeke (Pittiana × Dowiana aurea) were noted.

Messrs. CHARLESWORTH AND CO., Haywards Heath, were awarded a Silver Flora Medal for a group of hybrid Cattleyas, Laelio-Cattleyas and Odontoglossums with a selection of rare species, among which was a fine specimen of the rare Bulbophyllum ornatissimum with four spikes (see fig. 49—the first of the genus to receive a First-class Certificate when shown by the late Sir Trevor Lawrence on October 24, 1893. Its graceful umbels of cream and claret-coloured flowers are very attractive. Specially noteworthy in the group were Laelio-Cattleya Carmencita var. Gloriosa (L.-C. luminosa × C. Dowiana aurea), with bright yellow sepals and petals and intensely dark maroon-crimson lip, and the new Brasso-Laelio-Cattleya Joiceyi (B. L.-C. Cooksonii × C. Rhoda), with clear yellow flowers having a well-formed fringed lip of rosy-crimson colour.

Messrs. ARMSTRONG AND BROWN, Orchidhurst, Tunbridge Wells, showed three forms of their pretty Laelio-Cattleya Golden Wren (C. iridescens × L.-C. Thyone), varying from the narrow-lipped bicolor type to the more ample C. Eldorado form. All were of shades of yellow with purplish front to the lip; also the white Cattleya Harrisoniana alba Stanley's variety, C. Venus, and C. Iris Orchidhurst variety.

W. J. KAYE, Esq., Caracas, Ditton Hill, Surbiton, showed Laelio-Cattleya Bola (L.-C. Callistoglossa × C. labiata), a fine flower with the rose sepals and petals of C. labiata and the trumpet-shaped lip of the other parent; the front of the lip is very dark ruby-claret.

Fruit and Vegetable Committee.

Present: Messrs. A. H. Pearson (in the chair), Joseph Cheal, John Harrison, W. Poupart, W. H. Divers, H. Markham, George P. Berry, E. W. Roach, W. Pope, J. W. Bates, A. Bullock, P. W. Tucker, F. R. Ridley, and Rev. W. Wilks.

The Committee had a very busy time in connection with the extensive displays of vegetables.

AWARD OF MERIT.

Apple James Lawson.—An interesting, useful, and attractive Apple, raised by crossing Cellini Pippin with Gravenstein. It is a good cropper. The fruits are of medium size, approximating to the Cellini shape, and coloured with crimson shading and stripes on a green ground. The flavour is good, and the flesh is firm and juicy. The fruiting trees at Swanley have been inspected by a sub-committee, which reported favourably. Shown by Messrs. H. CASSELL AND SONS, Swanley.

GROUPS.

A magnificent exhibit, filling a 40-feet length of tabling, was made by EUSTACE PALMER, Esq., (gr. Mr. W. H. Wallis), Sherfield-on-Loddon, Basingstoke. Practically all seasonable vegetables in the highest state of perfection and arranged with great skill were on view. Special mention, however, must be made of the Scorzonera, Celery, Parsnips, Blood Red Onions, Broad Beans, and Congo Potatos. (Gold Medal.)

Messrs. WEBB AND SONS staged a collection which included very fine Altrincham Celery, Blood Red Onions, Celeriac, The Dean and Edgecote Purple Potatos, and Cauliflowers. (Silver Knightian Medal.)

Messrs. SUTTON AND SONS had an exhibit of vegetables, raised from seeds sown on July 15 of this year, much on the lines of the interesting collection at the previous meeting, but in a more advanced condition. The Black Spanish Radish, Improved Queen Onions, Peas, and Kohl Rabi had made most gratifying progress. (Silver Knightian Medal).

Messrs. H. CHAPMAN, LTD., displayed uncommon Marrows, such as Delicacy, Rotherside Mammoth, and Melon Marrow.

Splendid bulbs of their Premier Onion were shown by Messrs. DICKSON AND ROBINSON, and Messrs. W. ARTINDALE AND SONS showed the yields of various Potatos, such as Edzell Blue, Majestic, British Queen, and King Edward. Mostly the tubers were immense (one was said to weigh 1 lb. 15 oz.), but far too large, and often coarse for general use.

COMPETITIVE VEGETABLE CLASSES

Both in point of entries and general excellence of exhibits these classes were fully equal to former years. Potatos, Onions, Cauliflowers, Runner Beans and Tomatos, Leeks were perhaps the best of the many kinds of vegetables shown.

TWELVE KINDS DISTINCT.

There were only two exhibitors in this premier class, which requires vegetables selected from those named in a published list. The 1st prize, which includes the "Sutton" Challenge Cup, was won by W. H. MYERS, Esq. (gr. Mr. G. Ellwood), Swanmore, Bishop's Waltham, whose excellent collection included superb examples of Tender and True Parsnip, Gladstone Pea, Prizetaker Leek, New Red Intermediate Carrots, and Ideal Potatos; 2nd, the Duke of WELLINGTON (gr. Mr. E. Matthews), Mortimer, Berks, who had magnificent Red Intermediate Carrot, Black Beet, Autumn Giant Cauliflower, and Cucumbers.

NINE KINDS DISTINCT.

This class is specially arranged to illustrate vegetables of the size and quality most useful for the table, and from this point of view, as well as attractive arrangement, the 1st prize, which includes the Gordon-Lennox Challenge Cup, was well won by Mrs. JENNER (gr. Mr. H. Wheeler), Wenvoe Castle, Cardiff. Every item was the acme of freshness, moderate in size, and of perfect shape; special mention may be made of the Snowdon Cauliflowers, Gladstone Peas, Standard Pink Celery, and Premier Onions; 2nd, EUSTACE PALMER, Esq. (gr. Mr. H. Wallis), Sherfield-on-Loddon, Basingstoke, who showed excellent solid white Celery and Champion Horn Carrots.

SIX KINDS DISTINCT.

In this smaller class the same high quality obtained, and Mr. T. JONES, Bryn Penylan,

Ruabon, who won the 1st Prize, showed excellent Ailsa Craig Onions, Comet Tomatos, and St. Valery Carrots; 2nd, Mr. J. S. KELLY, The Gardens, Clairemont, Esher, whose outstanding dishes were of Gladstone Pea, Onions and Potatos.

POTATOS, TWELVE VARIETIES.

In this and the next class the exhibitors favoured the more shapely kidney Potatos to the rounds and ovals. G. THORN, Esq., was placed 1st with nearly perfect dishes of such sorts as Royal Kidney, Up-to-Date, Moneymaker, Sharpe's Express, and Majestic; 2nd, A. THOMAS, Esq., Kingsnorth, Ashford, of whose collection The Gardener, Up-to-Date and Windsor Castle were particularly good; 3rd, C. A. CAIN, Esq. (gr. Mr. H. Pateman), The Node, Welwyn.

The best collection of six varieties, staged by Mr. F. G. HOAD, Willesborough, included Factor, Sharpe's Express, and Arran Chief; 2nd, A. G. MCMEEKIN, Esq. (gr. Mr. J. COX), Boulter's Lock, Maidenhead; 3rd, Rev. J. B. LEIGH (gr. Mr. G. Johns), Yalding, Kent.

ONIONS.

The required six dishes were to be selected from half-a-dozen named types. Mr. JONES was placed 1st with magnificent bulbs of Ailsa Craig (both oval and round), Premier, Crimson Globe, Silver Queen, and others; 2nd, W. H. MYERS, Esq., who also had fine bulbs of Ailsa Craig and Brown Globe.

SALADS, SIX KINDS.

Showing Batavian Endive, beautifully blanched, Ideal Lettuce and Perfection Tomatos in his collection, the Duke of WELLINGTON was placed 1st; 2nd, W. H. MYERS, Esq.; 3rd, E. PALMER, Esq.

SINGLE DISH CLASSES.

The visitors could not help remarking that the prizewinners of collections were also prominent exhibitors of single dishes of vegetables and of equally high quality. Scarlet Runner Beans measuring 16 inches long, were almost perfectly straight, and quite tender, and Cauliflowers, in this difficult season, were excellent. To many accustomed to the large heads at local shows, the small size of the Cabbages called for comment, though it was realised that these were of superior quality.

The Duke of WELLINGTON won 1st prizes for (a) French Climbing Beans, (b) Cabbages, (c) Marrows, (d) Parsnips, (e) Peas, and (f) Tomatos, as well as four 2nd prizes. Mrs. JENNER excelled for (a) Scarlet Runner and French Beans, (b) Long Beet, (c) Onions, (d) Carrots, long and short, and (e) Red Tomatos. Mr. T. JONES won 1st prizes for (a) Celery, White and Red, (b) Leeks, (c) Yellow Turnips, (d) Curled Kale, and (e) Cauliflower. E. PALMER, Esq., was placed 1st for Savoy Cabbages, and won the 2nd prizes in several other classes. The Rt. Hon. T. E. HARVEY (gr. Mr. T. Avery), Gaddesden Place, Hemel Hempstead, had the best White Turnips and White Potatos. The Hon. Mrs. GREVILLE showed the best Globe Beet, E. THORN, Esq., the premier coloured Potatos, and Mr. J. KELLY won the 1st prize in the class for any other vegetable with Red Cabbages.

NEW DAHLIAS.

The joint committee, composed of members of the Floral Committees of the Royal Horticultural Society and the National Dahlia Society, was as follows:—

Present: Messrs. H. B. May (in the chair), Joseph Chas. D. B. Crane, John Green, H. J. Jones, J. W. Jarratt, Arthur Turner, and Chas. H. Curtis.

Mr. Jarratt was granted permission to change the name of his new Collerette Dahlia from Péronne (see p. H2) to Cambrai. The following Dahlias received the R.H.S. Award of Merit and the N.D.S. First-class Certificate.

Hero.—This medium-sized, very double decorative variety is an intense dark maroon colour. It is of good shape, but the outer segments reflex somewhat, as in the older show class. Stems long, stiff, and dark.

Sunray.—A very large and beautiful decorative Dahlia, and a splendid garden variety. The colour is soft yellow overlaid with a flush of salmon pink. The segments are broad, and some of the outer ones are twisted.

Lynx.—A giant Collerette Dahlia of excellent form. The broad, rounded segments make up a flower that is sure to attract competitors. The colour is bright orange or soft scarlet, and the large collar is bright yellow. The stems are sufficiently stiff to carry the blooms erect. Those three varieties were shown by Mr. J. C. WEST.

Scout Star.—A charming addition to the "Star" group, with neat, deep pink, yellow centred flowers of capital substance, borne erect on stout stems. Shown by Messrs. J. CHEAL AND SONS.

Labour.—A particularly pleasing decorative Dahlia that should prove very useful in the garden and also for large indoor decorations. The blooms are of good shape, and carried on stiff stems. The colour is primrose yellow with a deeper yellow shading over the centre.

Sydney Jones.—A large Cactus variety, of elegant form, the segments being long and slender. The colour is lilac pink, with a rich golden glow over the centre arising from the yellow bases of the segments. These two varieties were shown by Messrs. J. STEEDWICK AND SON.

White Top.—Although not of exhibition form this long-stemmed, free flowering Collerette variety is a fine garden plant, as the blooms are splendidly poised large, flattish, and with white tips to their broad, rich, deep crimson-scarlet segments.

Daddon.—One of the showiest of Paeony flowered Dahlias, and one in which the large, orange-coloured flowers are carried erect on long, stiff stems.

Dragoon.—A very double decorative variety, exceptionally free flowering, and of dwarf habit. The colour is deep, rich scarlet. The flowers are of large size, and the stems carry them stiffly erect.

Medusa.—A very free flowering and handsome decorative variety of first rate and regular form, the segments overlapping each other and increasing in length from the centre outwards. The colour is primrose yellow with a faint but pleasing pink suffusion at the tips.

Tulip.—A showy Collerette variety with flowers of good shape and substance. The colour is a most effective combination of deepest scarlet and yellow, the latter colour being most evident in the short collar and the margins of the segments. Stems long and stiff. The foregoing five varieties were shown by Messrs. BARPELT AND CO.

Scout.—This big semi-double Paeony flowered Dahlia is of rather rough form, but the showy, bronzy-red colouring is quite attractive. The flowers have two rows of very broad segments round a small golden centre. Stems rather weak.

Star of Devon.—A giant Collerette variety, with broad, bluntly pointed segments that reflex slightly. The form is not of exhibition standard, but the colour, richest old rose, with scarlet shading, and a red and white collar, is very distinct. Stems stiff and slender.

Saxon.—This very neat Collerette Dahlia is most attractive in form and colour. The latter is soft orange scarlet over yellow, the yellow showing at the tips of the segments. The collar has broad divisions, and is clear yellow. The three foregoing varieties were shown by Mr. J. V. JARRATT.

NATIONAL CHRYSANTHEMUM.

SEPTEMBER 23.—The first meeting of the Floral Committee was held at Essex Hall, Essex Street, Strand, during the afternoon of the above date. Mr. D. B. Crane was elected chairman for the ensuing year.

Four novelties were on view, and Commendations were granted to the following:—

Miss G. E. Thorpe.—An elegant, white, medium-sized Japanese variety, very free, and good alike when disbudded or grown in sprays. It is early-flowering, and may be described as a glorified Roi des Blancs, from which it has descended. Shown and raised by Mr. ALEX. W. THORPE, Lichfield.

Red Anemone.—A distinct and neat centred early variety, very free-flowering and attractive; a useful border plant. The colour is bright red, with a golden-bronze centre; the latter is not obtrusive, but quite in proportion with the spread of the ray-florets. The flowers are just under 3 inches across. Shown by Mr. A. W. THORPE.

The Executive Committee met in the evening at 35, Wellington Street, Covent Garden, under the chairmanship of Mr. Thos. Bevan. Judges were appointed for the Finchley and Westminster exhibitions, and five new members were elected. A balance of £52 in hand was reported, and the Reserve Fund still intact. The proceedings were very brief.

CROPS AND STOCK ON THE HOME FARM.

CONDITION OF THE CROPS.

THE crop reporters of the Board of Agriculture, in reporting on agricultural conditions in England and Wales on September 1, state that the fine weather which prevailed through most of August was everywhere very favourable to harvest operations, and a great deal of corn has been got in under excellent conditions. The rain which occurred, mostly towards the end of the month, caused little delay or damage. In the north, the harvest is naturally not so far advanced, and there are many reports of the corn having been laid. Wheat has proved to be the best crop of the year throughout the country; the ears are reported to be well filled, and straw of a good length. With an area under this cereal of 2,550,000 acres and a yield now estimated at 10 per cent. above average, a production in England and Wales may be anticipated of 10,500,000 quarters, or fully 3,500,000 quarters more than last year. Barley is about an average in the north, but rather below in most other districts; the area this year is about 1,500,000 acres, and the total production should be nearly 6,000,000 quarters. Oats, like Barley, are more favourably reported on than a month ago, and the yield now appears to be but little below the normal. The acreage has been largely increased, and it is hoped that the 2,779,000 acres returned under this crop in England and Wales will yield 15,500,000 quarters, or 2,000,000 quarters more than last year. Peas and Beans are also satisfactory, and nearly average crops, though the latter, owing to aphis, are not quite so good as a month ago.

Potatos are still most satisfactory, and remarkably free from disease upon the whole. The area of 634,000 acres should yield some 4,160,000 tons of Potatos, or 750,000 tons more than last year.

Turnips and Swedes, though some improvement is generally noted from most parts of the country, have not recovered from the dry weather of the early summer; and fields are often very patchy. Prospects indicate accordingly a poor yield everywhere. Mangolds, although also considered to have made a little improvement, cannot be marked any higher than a month ago.

Summarising the returns, and expressing an average crop by 100, the appearance of the crops on September 1 indicated probable yields which may be expressed by the following percentages: Wheat, 106; Barley, 99; Oats, 99; Beans, 99; Peas, 99; Potatos, 105; Turnips and Swedes, 89; Mangold, 95; Hops, 71.

WHEAT FOR AUTUMN SOWING.

As the season for sowing Wheat will soon be here a few words about different varieties may be instructive to those who, owing to the ploughing up of grass land, have not grown this cereal before, or to those who have tried one variety but with little success. No doubt all the one hundred or more varieties of Wheat known possess some point of excellence, either in grain, straw, or adaptability for certain soils.

Such local conditions as soil and market requirements have to be considered when selecting Wheat for sowing. I am a staunch believer in growing one variety only, principally because I grow the bulk of my Wheat for seed purposes, and if there are several sorts on the farm there is a risk of mixing them. It is a risky business to finish a rick either at the top or the bottom with a second variety, as when threshing takes place much difficulty will be experienced in keeping the varieties separate. Where Wheat is grown for the mill only it does not so much

matter whether two or more red sorts are mixed. At one time some farmers were wont to grow both red and white Wheat in the same field, but that custom has almost died out. There is an advantage in this method, because all varieties do not ripen at the same time, and consequently cannot all be in the same condition for harvesting or milling. Those who grow purely for milling purposes would be wise to select a "strong" Wheat, which contains much gluten, and produces the largest quantity of flour. In these respects a good red Wheat is better than a white variety. Some varieties of Wheat produce more straw than others under ordinary cultivation, but that, however, is not so important as the yield of grain. The ordinary farm cultivator as a rule requires one good Wheat, and to such I strongly recommend Webb's Red Standard, which yields heavy crops of good milling grain and plenty of superior straw. In this variety I find few "pinched" corns, such as are all too common this season in many varieties. In some districts Square Head Masters is a popular Wheat, but I fail to see the distinction between this and Red Standard, therefore it matters little which is grown. Little Joss was raised by Professor Biffen from Square Head Masters and Indian Ghurka. This Wheat is a heavy cropper, especially on gravelly and sandy soils. Yeoman is the latest of Professor Biffen's varieties. It is said to be a heavy cropper on all soils.

Among white Wheats, Victor and Benefactor have a good reputation for cropping.

Sometimes it is convenient to sow Wheat in March or April where additional acreage is desirable. I had very good results this season on newly broken up grass land from Red Nursery, but it is possible that Burgoyne Fife is superior, giving a heavier yield of "strong" corn.

Rivett's and Percival's Blue Cone are bearded varieties, and desirable where sparrows are troublesome. The latter is said to be the best of all bearded Wheats.

It is generally known now that all cereals sold for seed purposes must be tested for germination and purity, therefore I advise all growers who think of selling their Wheat for seed purposes to remember that ten days must elapse before the necessary certificate can be obtained.

The quantity of seed to sow per acre varies with locality and circumstances. No doubt many of us sow the seed too thickly. Living as I do where rooks, starlings, and larks abound, I allow for the crop to be thinned by these birds, and accordingly sow 2½ to 3 bushels per acre in October, increasing this to 4 bushels per acre from the middle of November onwards. The more vigorous-growing Wheats naturally require more space to enable them to tiller freely in spring. The condition of the soil has a bearing on this point. When the land is in good heart, well prepared by the aid of sheep, farmyard manure, or a plentiful supply of artificial stimulants of a suitable nature according to the class of soil, then some consideration should be given to the quantity of seed sown. Dressing the Wheat before sowing to prevent an attack of "smut" (which is very detrimental to the yield as well as to the quality of the grain for milling), is an important detail. The two fungi which attack the Wheat plant are known popularly as "stinking" and "loose" smut. To prevent attacks the seed corn should be dressed with a solution of sulphate of copper, at the rate of 1 lb. of the sulphate dissolved in one gallon of water for each sack: 4 bushels of seed. Dress the seed by spreading it 6 inches thick on a hard floor, sprinkling it with the solution, and turning over the heap at least three times to thoroughly wet each grain; then throw the bulk into a heap and allow it to lie until the next day, when it will be nearly dry and fit for sowing. *E. Molyneux, Bishop's Waltham.*

TRADE NOTES.

MR. ERIC H. L. DAVISON.

We regret to announce that Mr. E. H. L. Davison, chief partner in the firm of E. H. Davison and Co., Orchid Nurseries, Twyford, Berkshire, was killed in action on August 27 last. He was a very popular personality among Orchid growers, and was the donor of the Davison Cup, which was annually awarded at the Royal Horticultural Society's summer shows. At the beginning of the war he joined the Artists Rifles.

MR. T. LEWIS.

Mr. T. Lewis, Ashburton Villa, Hanwell, terminates his connection with Messrs. John Waterer, Sons and Crisp, Ltd., on the 30th inst. Mr Lewis is establishing an agency, in his particular line, for the present.

PRICES FOR APPLES.

A new Order controlling the prices for Apples came into force on Tuesday last, with the provision that Apples and Pears sold and delivered by the grower before the 24th inst. may be sold without restrictions up to the 27th inst. For all Apples other than jam Apples the maximum prices on sales by the growers vary according to the month of delivery, as follows:—September, 1918, 45s. per cwt.; October, 50s.; November, 52s.; December, 55s.; January, 1919, 61s.; February, 70s.; March and onward, 75s. The maximum prices per lb. on a sale by retail are as follows, according to the month of delivery:—September, 7d.; October, 8d.; November, 8d.; December and January, 9d.; February, March, and onward, 11d. Where Apples are sold by a seller to a purchaser in quantities exceeding 20 lb. at any time or in any one week the retail prices are to be reduced by ½d. per lb. If the quantities sold at any one time or in any one week exceed 40 lb., the maximum prices are to be the same as on a sale by wholesale.

Answers to Correspondents.

Colleogynes and Pleiargoniums in Unheated Greenhouse: *L. L. J.* It is almost impossible to keep Cœlogynes in good condition through the winter in an unheated greenhouse. The Pelargoniums and Grevilleas may be kept safely provided means are taken to keep frost from them. We suggest the pots and pans containing plants be bedded in dry bracken and that similar material be placed lightly over the plants during cold weather, but removed whenever the weather is mild or when sunshine raises the temperature in the house above 40°. Watering must be done with the utmost care; the Cœlogynes will need very little, and the Pelargoniums hardly any water during the winter, and it should be applied only on a bright, warm day, and in early morning. A very little fire heat would suffice to keep the plants healthy.

Corn Cobs: *B. C. L.* Corn or Maize Cobs should be quite young when cut for cooking; if the seeds have ceased to be tender and "milky" the cobs are too old to be dealt with successfully in the ordinary way. The specimen received was too old for culinary use.

Diseased Pears: *H. H. E.* The disease is caused by a fungus, known as Brown Rot (Sclerotinia fructigena), a pest responsible for much damage in Pear and Apple orchards. Affected trees should be carefully inspected after leaf-fall. The removal and burning of all dead and cankered growth will be the first step towards a cure. Follow this by a spraying with Bordeaux mixture (4 lbs. quicklime, 4 lbs. copper sulphate, 50 gallons water) immediately before the flower buds open. In the case of a very bad attack, such as the specimens suggest, spray a second time as soon as the flowers have set their fruits.

Gardening Prospects in Tasmania and Queensland: *J. H.* For information concerning the prospects of fruit cultivation and market gardening in Tasmania and Queensland write to the Agents-General of these colonies, Australia House, Strand, London.

Names of Fruits: *Pomona.* Apple Worcester Pearmain.—*F. V.* 1, Not recognised; 2 and 4, Dumelow's Seedling; 3, probably Bramley's Seedling; 5, a form of Blenheim Pippin; 6, Worcester Pearmain.—*W. B.* Fruits immature, probably Beurré Clairgeau.—*J. and W. B.* Cox's Orange Pippin—a very fine specimen.—*R. D.* 1, Red Juneating; 2, King of the Pippins.—*A. D. P.* 1, Keswick Codlin; 3, Lord Grosvenor; 4 and 12, Ribston Pippin; 5, Tower of Glamnis; 6, Nonsuch; 7, Winter Strawberry; 8, Dean's Codlin; 11, Margil; 15, White Westling; 14, Potts's Seedling; 16 and 17, Lord Suffield; 18, Herefordshire Beefing; 19, Cellini; 20, Sturmer Pippin.—*T. W. B.* 1, Brockworth Park; 2, Beurré d' Amanlis; 3, Aston Town.—R. S. 1, Devonshire Quarrenden; 2, Irish Peach; 3, Alfriston; 4, not recognised; 5, Blenheim Pippin; 6, Duchess of Oldenburg; 7, Hanwell Souring; 8, Cox's Pomona; 9, Ecklinville Seedling; 10, Cellini; 11, Red Astrachan; 12, Golden Harvey.—*J. M.* Small's Admirable.—*F. W. S.* 1, Stone's (syn. Loddington); 2, Round Winter Nonsuch; 4, Red Hawthornden; 5, Sturmer Pippin; 8, Alfriston; 10, Gascoyne's Scarlet; 11, local variety; 12, Scarlet Nonpareil; 13, James Grieve; 14, Cox's Pomona; 15, Potts's Seedling.—*J. P.* 1, Smart's Prince Arthur; 2, Lady Henniker; 3, Warner's King; 4, Cox's Orange Pippin; 5, not recognised.—*S. B.* 1, Prince of Wales; 2, Black Diamond; 3, Prince Englebert.

Names of Plants: *W. M. M.* 1, Cattleya Loddigesii; 2, Cypripedium tonsum; 3, send another specimen.—*S. B.* Helenium autumnale.

Outdoor Tomatos: *M. S.* If the Tomatos were grown in pots all the season, but were placed out-of-doors as soon as danger from frost was over, without any other protection or aid than a wall or fence affords, the fruits therefrom would be as eligible for competition in a class for "Out-door Tomatos" as those produced by plants planted out of-doors in early June. This decision would, of course, apply equally whether the competition was organised by an Allotment Association or a Horticultural Society.

Potato for Naming: *H. E. B.* The variety is Up-to-Date.

Royal Horticultural Society's Examination: *D. McB.* Full particulars of the examination may be obtained on application (with stamped addressed envelope enclosed) from the Secretary, Royal Horticultural Society, Vincent Square, Westminster. The Society recommends certain books as especially useful for prospective candidates, and it will also supply lists of the questions set at previous examinations at a nominal charge.

Sale of Plums: *H. R. W.* The only Plums scheduled under the Plums Sales Order are the Pershore, or Egg Plum, Gisborne's, Blaisdon, and Bush or Mogul varieties.

Tomato Leaf Rust: *T. M.* Although the Tomatos may have suffered from attacks of the White Fly (Aleyrodes vaporariorum), the chief cause of damage is Leaf Mould or Leaf Rust, caused by the fungus known as Cladosporium fulvum. There is no cure at the present stage. Wherever this disease has appeared the young plants should be sprayed with weak Bordeaux mixture or a solution of potassium sulphide as a preventive measure, and the spraying should be continued at intervals until the fruits begin to ripen. Remove and burn all badly affected leaves, and ventilate the house freely to obtain a buoyant atmosphere.

Variegated Vine Leaves: *W. T.* The leaves on the small, lateral Vine shoots have not developed the usual green colour, and the yellow colouring mater, etiolin, gives the foliage a golden appearance. Such a condition is known as etiolation, and is common in nearly all cultivated plants. You would not be successful in perpetuating such a shoot entirely devoid of chlorophyll.

Communications Received.—S. H.—E. M.—T. W. B.—E. M.—E. R. F.—J. B.—J. P.—R. P. B.—J. C. W.—P. J.—F. G. L. M.—O. B.—J. B.—A. E.—H. L.

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CONTENTS.

ILLUSTRATIONS.

WATER-LILIES IN ST. VINCENT.*

ALL the streams in St. Vincent are swift running from mountain to sea, and the coastal lands are well raised above sea-level, consequently there are no swamps. Owing also to the light volcanic soil, pools retain water for short periods only, with the result that there are few striking flowering water plants. Attempts to introduce these plants into pools in rivers have not been successful, because the pools are so frequently washed out during heavy rains. So far as the writer is aware, the Water Lily Nymphaea rudis is found only in one small pond in the colony, and this dries up after the rainy season every year. Sporadic efforts have been made from time to time to grow aquatic plants in gardens, but these have not been viewed with favour by the sanitary authorities, owing to the fact that the tanks or tubs often served as breeding places for mosquitos. This disability, however, can be easily remedied now that a permanent source of supply of the "millions" fish is maintained in the Botanic Gardens.

In the year 1915 a large circular concrete basin or pond, 30 feet in diameter and 2 feet deep, was constructed in the gardens, in order that water plants, more particularly the true Water Lilies of the genera Nymphaea and Victoria might be cultivated.

The Water-Lilies, with the exception of the Victoria regia, are grown in tubs 14 inches high. Cement barrels sawn in halves have been found suitable for the purpose, as they do not readily rot under water. Even strong-growing Nymphaeas will thrive and flower freely in these tubs without it being found necessary to transplant them. Other advantages are: (a) the water of the pond can be kept fresh and clear, and free of decaying vegetable matter, and (b) the growth of individual plants can be controlled.

In preparing tubs for planting, holes are bored with a large auger in the bottoms, as well as around the sides, about 3 inches from the base. To ensure proper drainage, a layer of stones or broken crocks is placed inside the tubs, covering the holes, and on this is placed a layer of rotten wood. The soil mixture or compost used consists of good loam, cotton seed meal, and wood ashes, in the proportion of 10 : 2 : 1 by volume. This medium has given excellent results, and it has not been uncommon for a single plant to produce eight or nine flowers at one time, some of which have exceeded 12 inches in diameter. Before the cotton-seed meal and wood ashes were used, green filamentous algae, known as "moss," produced very unsightly effects in the pond each spring. Copper sulphate might perhaps have been used to control the algae, but for various reasons it was considered inadvisable to use it. Whether it was a mere coincidence or not has not been ascertained, still the fact remains that after using the above mixture the algae disappeared completely, and gave no further trouble. It may be added that other rich soil composts could be used for the tubs, or their composition varied to suit particular circumstances.

When planting the different kinds of Nymphaeas, small plants are selected from those which have grown up around the old flowering heads. Suckers are usually produced in considerable numbers in the N. Lotus and N. tuberosa hybrids and varieties that have been grown. One young plant of a strong-growing kind, and two or three of those less robust, are set in each tub just before it is submerged. Small tubers may also be used, especially of those varieties that have a distinct resting period each year even in presence of an abundant supply of water and a slight fall of a few degrees only in temperature.

For the Victoria regia, a bed is formed in the centre of the basin with the same soil mixture as described above. The soil is kept in position by means of a circle of large stones built up to the requisite height of 12 inches; this, as in the case of the Nymphaeas, allows of a maximum depth of water of 20 inches covering the soil, which is ample. Seedlings of the Lilies are raised annually from seed produced in the pond, not one of those is planted in the bed.

Tubers should be fully exposed to sunlight and sheltered from high winds. They require little attention subsequently, but it is necessary every week to take off exhausted or damaged leaves and flowers, in order to keep them in a healthy condition.

Hybridising of tuberous Water-Lilies is quite easy, and repays attention. Our experience has hitherto been confined to the raising of hybrids between N. Lotus and N. tuberosa, and we have already obtained some beautiful forms. These two species were selected, because 1, the diurnal movements of the floral organs were practically identical, and gave most promise of early success, and 2, because only a small number of seedlings could be tested at one time. It may be explained that certain groups of Nymphaeas flower by night, and others in the day. For example, the flowers of N. Lotus and N. tuberosa begin to open after dark, remain fully open all through the night, and commence to close soon after sunrise. They are quite closed by 10 a.m. Again, N. zanzibarensis starts to open about 9.30 a.m., remains fully open all day, and closes about 6 p.m. A variety of this species, N. zanzibarensis var. rosea, commences to open soon after sunrise, and closes about 5 p.m. Apart from the question of raising seedlings, it is important to note that unless the pond is visited before 10 a.m., or by moonlight, N. Lotus and N. tuberosa are not seen with open flowers, whereas the full beauty of N. zanzibarensis cannot be seen until after 10 a.m.

The flowers are frequented soon after sunrise by the honey bee (Apis mellifica). This is the chief insect visitor observed. Night flying insects have not yet been seen on the flowers. The honey bee does not confine itself to visiting flowers of one colour only, but has often been noticed to collect pollen from white, pink, and red flowers in succession. It is this fact which renders common the production of natural hybrids.

Owing to the limited facilities for handling seedlings, the practice is to allow only one or two flowers on selected plants to mature seed. All the other flowers, as soon as they have faded, are removed. It is often difficult to ascertain when the fruit is ripe, for after flowering the flower-stalk bends outwards and downwards, and submerges the fruit, which ripens under water or rather, gradually decays. When sufficiently decayed, the seeds are liberated. To each seed is attached a spongy mass of tissue filled with air, by means of which the seeds are enabled to float and are dispersed over the surface of the water. After a few hours the tissue loses the air, and the seeds sink. Some days later, provided the conditions are suitable, the seed germinates. The Victoria regia bed in the centre of the pond provides a suitable nidus, and it is usually possible to obtain an adequate number of seedlings from this source for testing purposes. At a very early stage seedlings can be recognised in respect of reds and whites, and there is in the species described a correlation between leaf and flower colour—that is, seedlings which will produce pink and red flowers have reddish-brown leaves of different shades, and those which will produce white flowers, green leaves. The distinction is noticeable in the first rosulate, sagittate, submerged leaves of the seedlings, and is very pronounced in the earliest floating ones. Seeds can, of course, be collected, and sown in pots or boxes under water, if desired.

On one occasion a fruit of a Zanzibar Lily, from which seed was specially desired for sowing, liberated its seed before it could be secured, and fortunately no other seeds were being germinated in the pond at the time. After a few days a large number of small seedlings, possessing one minute leaf and one or two fine roots only, with the seed still attached to the little plant, were discovered in various places. The seedlings were so small—less than ½ inch long—that they were difficult to handle. A novel method was devised in order to transplant them into boxes. The boxes were filled with sandy soil, and submerged in the positions they were to occupy. Then some clay was obtained, and rolled into small balls about the size of a playing marble. Each small seedling was then placed in the ball of clay, leaving only the small leaf exposed. The seedlings with their clay "sinkers" were then planted in the soil in the boxes under water, at distances of about an inch each way. This method proved successful, and the seedlings were successfully established.

When floating leaves have been formed, the selected seedlings are transferred to boxes large enough for them to produce a few flowers in. These boxes can be made conveniently out of an ordinary kerosene box, by sawing it in half, and boarding up the sides cut through. These boxes are prepared for the plants in a similar manner to that described in the case of the tubs. The seedlings will "declare" themselves in a few months, and then if they prove to be of sufficient interest they can be propagated vegetatively in the manner already described. The fact that most Water Lilies can be reproduced by vegetative means eliminates the difficulties usually met with in fixing hybrid plants that have to be grown from seed.

For the amateur with limited facilities it is suggested that a start might be made with the Nymphaeas named below; these are easy to grow, are robust, flower freely, and have not been found susceptible to disease:—

N. Lotus, var. dentata	..	large pure white.
N. hybrida	..	large light pink.
N. tuberosa, var. rosea		bright deep pink.
N. zanzibarensis	.. ..	intense blue.
N. zanzibarensis, var. rosea		heliotrope.
N. William Stone ..	..	blue.

The above named Lilies give charming floral displays. Several others might be named, and the list added to or modified, but, at the outset, most growers will find that these will meet their requirements.

Although the percentage of natural hybrids from probably impure varieties is always open to question, and cannot be exactly given, yet several excellent hybrids have been raised

* From the *Agricultural News*, July 27, 1918, by Mr. W. N. Sands, Agricultural Superintendent, St. Vincent.

ORCHID NOTES AND GLEANINGS.

CATTLEYA VENUS THE KNOWLE VARIETY.

Cattleya Venus, the result of crossing C. Iris (Dowiana aurea × labiata) and C. Dowiana aurea, was first flowered in 1908, the second cross with C. Dowiana infusing exceptionally bright colour into its flowers and perfecting the floral segments. But although there has been variation in the form of the flowers the dominating influence of C. labiata so strongly evidenced in C. Iris is in the main carried on to the varieties of C. Venus, the departure to the complicated the cross the greater is the variation, but, throughout all, definite sectional type species, such as C. labiata, most tenaciously assert themselves, the continuation of their features being determined on the fertilisation of the individual ovule in more or less quantity and degree even in the most remote ancestry. Garden efforts, useful as they are, give a very limited means of elucidating the mysteries of hybrid Orchids. Of the innumerable seeds in a capsule only a small proportion is sown; in most cases a further reduction is made in raising and bringing the plants to maturity, and thus even in the most satisfactory crosses possibly the best novelties were included in those discarded.

The flower of Cattleya Venus The Knowle

Fig. 50.—Cattleya Venus The Knowle variety.

type indicating the form of labellum as in C. Dowiana, being less frequent than would be expected from the second introduction of that species into its composition.

In C. Golden King (Venus × C. Hardyana) and C. Aconcagua (Venus × Dowiana aurea), however, the third introduction of C. Dowiana gives a more general Dowiana character to the lip, and even the individuality of that very distinct C. labiata C. labiata, in the manner shown by all the normal types still occasionally appears. On the contrary, C. Iris Venus Trist seems to have reverted in form to C. labiata even more definitely than C. Iris, though the colouring of Venus asserts itself.

These and many other instances of the vagaries of hybrid Orchids show that the more variety (see fig. 50), sent by John Hartley, Esq., The Knowle, Morley, Yorkshire, gives an excellent example of a fortunate hybrid perfected by good cultivation, and amply proves the correctness of the award of a First-class Certificate by the Manchester and North of England Orchid Society on September 20, 1917. The sepals and petals are 5 inches across, and of the colour of old gold, with a slight bronze shade and lighter midribs on the inner halves. The lip has a broadly expanded magenta-crimson front lobe, which is wavy and fimbriated at the margin. The short side lobes are coloured, like the petals, with rose-coloured lo nched lines on the inner side. The centre of the lip has a deep ruby-red tint and a few yellow lines. The column is fleshy and white.

THE ROSARY.

POLYANTHA ROSE JESSIE.

This, the brightest of Polyantha Roses, has with me two serious defects. In the first place its foliage soon loses its freshness, so that by August the leaves produced with the first bloom sprays are blotchy and ragged, soon withering and falling. The plants thus, though they may send forth secondary and tertiary clusters of bloom, present a bare and unhappy appearance through the autumn. The foliage has the appearance rather as if it were suffering from the fungous disease known as "leaf scorch." During the late spring and early summer of last year a small bed of this variety was sprayed regularly with a fungicide (potassium sulphide solution, with soft soap), but with no apparent beneficial result; the foliage was as badly affected as that of this year with no spraying. A plant of Orleans Polyantha Rose growing in proximity has not suffered in this way. Its early-produced foliage is still green, and functional at this late date.

The other defect is rather curious, and one which I have not observed before in Roses. The flower-buds of three out of the ten plants I possess refuse to expand. The buds swell to full size and seem just on the point of bursting, but never open, no matter what may be the state of the weather. They refuse to open when the sprays are cut and placed in water, cold or warm, or even when put in a heated room. These plants have been observed to behave in this manner during hot seasons, so the defect seems inherent.

It would be interesting to know if other Rose growers are having, or have had, similar experiences with this popular Polyantha Rose. Is it a case of a variety, vigorous at first, rapidly losing its robustness? It was introduced, I believe, barely ten years ago. *J. P. Carlisle.*

HARDY FLOWER BORDER.

MALVA ALCEA FASTIGIATA.

Under the name of Malva Morenii a good plant is being grown in some gardens known to the writer as well as in his own. It is, however, according to modern authorities, Malva Alcea fastigiata. The plant is a perennial, some 2 or 3 feet high, flowering from July to October, and my specimens are still in bloom. The flowers are a warm rose-red colour, and are both attractive and plentiful for the considerable period over which they are produced. This plant apparently grows best in a dry soil, for it appears to suffer no hardships in dry weather, and also withstands our winters satisfactorily. It is a native of Italy, and is figured in *Bot. Mag.*, t. 2793.

ACONITUM NEUBERGENSE.

Looking through one of Mrs. Loudon's books (*The Ladies' Flower Garden of Ornamental Perennials*) recently in search of certain information not to be found everywhere but often enshrined in some of the older gardening books, I came upon a reference to Aconitum neubergense, as distinct from A. Napellus, to which it is referred by the *Index Kewensis*. I am seeking information regarding what appears to have been a distinct species or variety, as described by Mrs. Loudon, but not illustrated in the coloured plate which delineates several of the other Monkshoods. Mrs. Loudon writes of A. neubergense that it is "often confounded with the common kind; but it differs in several respects. The flower is much longer, and it resembles rather a lady's head-dress in the beginning of the last century, with a high cap and pinners, than a monk's hood." I cannot recollect any Aconitum answering to this description. According to Mrs. Loudon's list of synonyms A. neubergense Clus. is synonymous with A.

Napellus, Jacq.; A. neomontanum, Wulf; A. cammarum, var. B. Linn., and A. Braunii, Rchb. This synonymy is not, however, in accord with the *Index Kewensis*. *S. Arnott.*

NOTES ON CONIFERS.

XX.—ABIES FIRMA.*

This well-known Conifer, the Momi of the Japanese, is the only Fir found in the southern islands of Japan, where it attains a large size on the plains. Wilson describes it as a noble tree with massive branches spreading horizontally and forming an oval or flattened crown. In the humid valleys of the south it reaches a height of 120 feet, with a stem up to 18 feet in girth. It is frequently planted in temple grounds, where it sometimes attains a height of 150 feet. It appears to have been first noticed in Japan by Thunberg, the pupil of Linnæus, who mistook it for the common Silver Fir, A. pectinata, and it was not until many years afterwards that it was recognised as new by Siebold and Zuccarini and described by them from cultivated examples collected by Siebold near Tokio. These authors afterwards described this same Fir under the name of A. Mildii, believing it to be distinct from their A. firma, but Dr. Masters† showed pretty conclusively that the two are merely stages of one species.

Abies firma is easily distinguished from the other Japanese species in cultivation by its bright green, coriaceous foliage, each leaf being tipped by two minute cartilaginous points which are easily visible through a lens. The young shoots are described as pubescent in the grooves, but this character cannot always be relied upon as a determining mark of the species, for I have seen specimens of undoubted A. firma in which the branchlets were almost entirely glabrous.

This is one of the Conifers introduced by J. H. Veitch in 1861, but it is stated that Maries, one of the Veitchian collectors, also sent home seeds of it in 1879. Although perfectly hardy, it is not common in cultivation, and no very large trees of it are on record. One of the best examples I know of is in Lord Derby's famous collection at Tortworth which has attained a height of about 60 feet and is about 6 feet in girth‡. There are several good specimens in Cornwall, one of the best being at Carclew. This was reported in 1891 to be 45 feet by 2 feet 8 inches. When measured by Elwes eleven years later it was 60 feet by 4 feet. In 1903 I made it 61 feet by 4 feet 10 inches§. A tree at High Canons, Hertfordshire, bore cones in 1907 and measured 47 feet by 3 feet 6 inches. Bean¶ mentions a tree 4 feet 6 inches in girth in the arboretum at Tregrehan, but does not state its height.

A specimen at Highnam Court, Gloucester, was 39 feet by 3 feet 9 inches in 1908. The tree at Woburn, illustrated in fig. 52, is a small one; it measured 29 feet by 2 feet 4 inches in 1915, when it coned (see fig. 51). It appears to be making good growth. The date of planting is not recorded. A tree at Bayfordbury, Hertfordshire, was 31 feet high by 1 foot 10 inches in girth in 1909. Other trees mentioned by Elwes are at Bagshot Park, 36 feet by 3 feet 11 inches in 1907, and planted in 1880; in Scotland, at Castle Kennedy, 44 feet by 5 feet 5 inches in 1904; at Munches, Dalbeattie, 30 feet by 2 feet 6 inches; and in Ireland, at Fota, 25 feet high and coning in 1907; Hamwood, Co. Meath, 36 feet by 2 feet 10 inches in 1904; and at Powerscourt, a tree 39 feet by 3 feet 11 inches in 1906 (coning). I shall be glad to have up-to-date dimensions of these or any other trees. *H. Bruce Jackson, The Avenue, Kew.*

* *Abies firma*, Siebold and Zuccarini, *Fl. Jap.*, II., 45, t. 107 (1844); Masters, *Gard. Chron.*, XII., 198–199 (1879), and *Journ. Linn. Soc. (Bot.)* XVIII., 334 (1881); Mayr, *Abiet. Jap. Recke.*, 31, t. 1, f. 1, 4 (1890), shortly as *A. firma*, *Rep. Forest Japan*, text 1, 7, t. 6, ff. 1–21 (1900); Kent, *Veitch's Man. Conif. Soc.* (1900); *Hortus Veitchii*, 255 (1905); Elwes and Henry, *Trees of Great Britain and Ireland*, IV., 762 (1909); Clinton-Baker, *Illust. Conif.* 12 (1909); Wilson, *Conifers of Japan*, 55 (1910).

A. bifida, Siebold and Zuccarini, *Fl. Jap.*, II., 18, t. 100 (1844).

Pinus firma and *P. bifida*, Ant. in e, *Conif.* 79, 204 (1846).

P. momi, G. Gordon, *Pinet.*, 147 (1858).

Gard. Chron., N.S., Pts. 390 (1870).

† *Hortus Veitchii*, p. 235.

‡ Mentioned in *Veitch's Man. Conif.*, p. 208. According to Elwes this tree was 32 feet by 3 feet in 1909.

§ Mentioned in *Veitch's Man. Conif.*, p. 208.

¶ *Kew Bull.*, 1916, p. 141.

BULB GARDEN.

LILIUM CANDIDUM SEEDING.

Mr. E. Dowsett, Ravenshill, Lechlade, Gloucestershire, writes:—"With regard to a query in a recent number of the *Gardeners' Chronicle*, whether L. candidum produces seed in this country, I have found that plants in pots and under glass readily form seed pods, which sometimes attain to very good size. I once raised a few seedlings, but they grew very slowly, and I finally lost them. In 1914 L. excelsum also produced about twenty apparently good seeds, but I never could find they germinated. I have found a few L. candidum under glass in over-attacked by Botrytis, even if the plants were badly affected the previous year. I think the reason may be that the foliage of the indoor plants is quite dry, and it could not suffer from spring frosts; also the growth is made earlier in the year when the Botrytis is dormant."

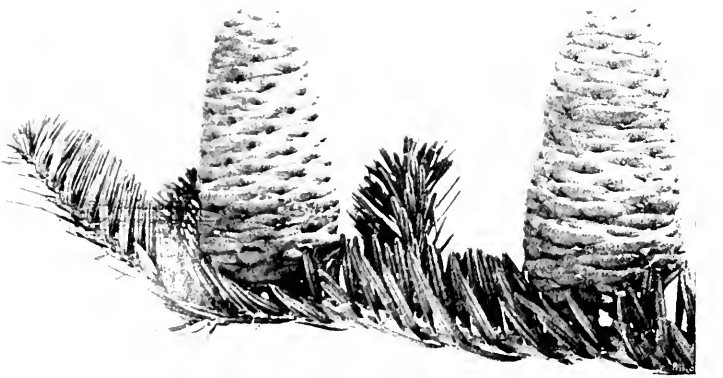


Fig. 51.—CONES OF ABIES FIRMA.

REMARKS ON THE CONDITION OF THE FRUIT CROPS.

(See Tables in *Gardeners' Chronicle* for August 3, p. 42.)

(*Continued from p.* 128.)

ENGLAND, S.W.

Herefordshire.—We had the best crop of Pears I have seen on Zéphirin Grégoire and Louise Bonne of Jersey, but took them all not more than one or two Pears on a tree. Plums of many sorts are free of any fruit; in place, Victoria and Belle de Louvain have a few odd fruits. Apples are probably yielding not more than one-eighth to one-tenth of a crop all round. In my own garden Ribston Pippin, Claygate Pearmain, and Cox's Pomona have moderate crops. Bramley's Seedling, Devonshire Quarrenden, and Golden Noble are quite bare of fruit. Plums are badly affected by leaf-curl aphis, and the mealy aphis appeared early in June in large numbers, especially on Victoria and Gage Plums. The rare Apple-leaf sawfly caterpillar appeared on two or three small Apple trees in my garden, but I have not heard of it elsewhere. *Dr. H. E. Durham, Dunelm, Eyot Hill, Hereford.*

Monmouthshire.—Apple trees blossomed freely, but the fruits set badly, and the blossom weevil was very prevalent. There was a great scarcity of Pear blossom, and few varieties have any fruit. Plums of all varieties are almost entirely without fruit. Cherries yielded light crops. Small fruits, including Strawberries, gave average crops, although they suffered from want of rain. There was a great dearth of catkins on Cobnuts, which accounts for a very light crop. The soil is heavy, resting on clay marl. *Thos. Coomber, The Hendre Gardens, Monmouth.*

Somersetshire.—Apples, Pears, and Plums generally are complete failures. Apple King of the Pippins and Plum Victoria being the only exceptions. Gooseberries and Red Currants yielded average crops of very good quality. Black Currants were a very poor crop. Raspberries and Strawberries promised well, but owing to continued dry weather the later berries failed to swell and ripen. Cider Apples are very scarce. Morgan Sweets only carrying a fair crop, even on trees that did not bear last year. This variety usually fruits in alternate years. Apricots, Peaches, and Nectarines are yielding very good crops. Figs on outside walls are also promising well. *George Shoesby, Halswell Park Gardens, Bridgwater.*

Worcestershire.—Apple and Pear crops are failures, with the exception of a few trees carrying very moderate crops. There was very little blossom on Pear trees, but an abundance on Apple trees. Caterpillars were plentiful, and may have had something to do with the failure. Strawberries yielded an average crop, of very good quality. Gooseberries and Currants bore freely. Our soil is a good, medium loam, resting on sandstone. *Ernest Avery, Finstall Park Gardens, Bromsgrove.*

The fruit crops are the poorest in my experience. The trees in most instances flowered well, but they did not set their fruits. Apple Ecklinville Pippin, which showed only a fair promise at flowering time is now completely bare of fruit. Pears are practically a failure. There are very few Plums except on trees of the variety Pershore. Morello Cherries promised well, but bore only a light crop. Other sorts of Cherries were poor and few. Peaches and Nectarines are yielding poorly; some trees have no fruits, and there are very few. Apricots. Raspberries would have been a heavy crop, but

the continued drought played havoc with them. Black and White Currants bore thin crops, but Red Currants were good on most varieties. Strawberries would have been a good crop if we had had more rain, but the fruits shrivelled up. The soil varies from good, light loam to sandy and marly clay. *T. Watkins, The Grange Gardens, Claines, near Worcester.*

—— Peaches, Nectarines, and Apricots are yielding abundant crops, whilst Apples, Pears, and Damsons are nearly failures. Plums are about half a crop. The above is general with only a very few exceptions. The month of March, when the first-named trees were in flower, was mild, dry, and sunny, which enabled the fruits to set perfectly. April, when the Apples, Pears, and Plums were in blossom, was stormy, cold, and sunless, therefore the pollen was never able to disperse. Rain and snow fell on 15 days. This is the worst Apple and Pear year we have had for thirty-five years. *William Crump, Madresfield Court Gardens, Malvern.*

—— The fruit trees generally throughout the county present a barren and an exhausted appearance. Small fruits have been fairly good in number but rather small in size, and, consequently, their weight has been considerably less than it would have been had there been more rain before the ripening period. *James Udale, 7, Ombersley Road, Droitwich.*

WALES.

CARDIGANSHIRE.—The Apple crop here is generally very poor, but some trees are bearing good crops, namely, Lord Grosvenor, King of the Pippins, Allington Pippin, and Worcester Pearmain. Pears are quite a failure, as most of them were in bloom when we had two very sharp frosts on April 15 and 19. Bramley's Seedling Apple trees were also cut by frost before the flowers opened. Certain varieties of Apples and Pears failed to flower. Black Currants and Gooseberries were very poor. Strawberries were very good, and Raspberries bore a fair crop. *Thomas Hazeldine, Crosswood Gardens.*

CARNARVONSHIRE.—Fruit crops generally in this district are very poor indeed, the worst known for many years. Apples and Pears are failures. Apple trees have been covered with caterpillars, some of the trees not having a leaf left on them. Bush fruits have given an average crop. The soil is gravelly, and crops feel the effects of drought very acutely. *J. S. Higgins, Glynlliron Gardens, near Carnarvon.*

DENBIGHSHIRE.—The fruit crops, with the exception of small fruits, are generally poor. Apples and Plums are yielding a thin crop, and Pears are a complete failure. Peaches and Apricots are bearing average crops. Strawberries cropped and finished well. *J. A. James, Chirk Castle Gardens.*

—— Pears this year were very short of bloom. Apples and Plums bloomed heavily, but owing to the cold, sunless weather, with a north wind, there was a very poor set. The trees also became infested with caterpillars. Apricots, Peaches, and Nectarines are bearing fair average crops. *John Martin, Bryn Estyn Gardens, Wrexham.*

FLINTSHIRE.—The fruit crops in these gardens are amongst the worst I have seen in 29 years. Apricots are yielding the best crop, although when they were in bloom 9° of frost were registered. There is also a very good crop of outside Figs. Strawberries were very deformed, which I attributed to the inclement weather through April. The fruit trees have been very much damaged by caterpillars. *James Barnard, Mostyn Hall Gardens, Mostyn.*

GLAMORGANSHIRE.—The Apple crop in this district is a very light one, with the exception of Lord Grosvenor, James Grieve, Charles Ross, and one or two other varieties, which are bearing very well. Cordon trees of Cox's Orange Pippin, Allington Pippin, and Pearson's Nonesuch are bearing good crops. Pears are almost a complete failure. Cherries were very good, especially the Morellos. Peaches and Nectarines are much below the average. Strawberries yielded a good crop, and the fruit was especially fine. *C. T. Warmington, Penllergaer Gardens, Swansea.*

PEMBROKESHIRE.—Apples, Pears and Plums are very scarce this year: in fact, there are practically none. Currants and Gooseberries, on the contrary, gave heavy returns, and the quality was generally exceptionally good, although in some parts of the county the dry weather affected them to some extent. *T. H. Roberts, Slebech Park Gardens, Haverfordwest.*

RADNORSHIRE.—Apples, Pears, and Plums are almost complete failures this year. Nuts appear to be about an average crop. Small fruits are also an average number, but rather small, and lacking in flavour on account of the drought. Raspberries being the best, with a fairly heavy crop. Blackberries are a promising crop, and no doubt will be much sought after owing to the failure of other fruits. *J. MacCormack, Macllwch Castle Gardens, Glasbury.*

IRELAND, N.

DOWN.—Certain varieties of Apples are giving good crops, notably Emneth Early, Grenadier, Warner's King, Golden Spire, Lord Suffield, Stirling Castle, Small's Admirable, Lane's Prince Albert, Bramley's Seedling, Gladstone, Lady Sudeley, Worcester Pearmain, James Grieve, Rival, Allington Pippin, and Ribston Pippin. The only Pears with any quantity of fruit are Williams' Bon Chrétien, Beurré Hardy, Doyenné du Comice, and Le Lectier. The Czar, Victoria, and Pond's Seedling are the only Plums with clusters of fruit. Strawberries have had a good season. All varieties did well, and gathering in quantity commenced in the second week of June. *T. W. Bolas, Mount Stewart, Newtownards.*

MAYO.—All fruits are very fair this year with the exception of Apples and Pears, which were destroyed by a heavy storm at the end of May. The soil is clayey loam. *Richard Joyce, Westport House Gardens, Westport.*

TYRONE.—The fruit crops in this neighbourhood are on the whole fairly satisfactory with the exception of Plums. Pears are very partial; some varieties (notably Williams' Bon Chrétien) are carrying very heavy crops, but late sorts are, as a rule, very scarce. Small fruits were all good, especially Black Currants and Gooseberries. Caterpillars have been troublesome on Red and White Currants, and to a less extent on Gooseberries, otherwise insect pests have not been unusually numerous. A heavy storm on June 9 did considerable damage in exposed situations, breaking the young growth and stripping off the young, tender foliage. *Fred W. Walker, Sion House Gardens, Sion Mills.*

IRELAND, S.

CORK.—Apple trees bloomed fairly well, but cold winds and frosts in May completely destroyed the blossom. The Pear crop is a complete failure. A large number of Apple trees are suffering from American blight, and Gooseberries are badly attacked by caterpillars. The exceptional drought prevented Raspberries and Strawberries from swelling properly, and numbers of Apples are falling from the same cause. Altogether the fruit prospect is the worst for many years. *M. Colbert, Aghern Gardens, Conna.*

——All fruits blossomed freely except Pears. Generally speaking, however, the bloom appeared to be weak, particularly on trees that gave a heavy crop last year. Strawberries and all bush fruits promised well in the early part of the season, but as a result of the cold nights, harsh winds, and prolonged drought during May, June, and the early part of July, all crops were below the average with the exception of Gooseberries. On dry soils practically all bush fruits were a failure. *J. Dearnaley, 17, St. Patrick's Terrace, Magazine Road, Cork.*

(To be concluded.)

The Week's Work.

THE KITCHEN GARDEN.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

Digging Vacant Ground.—Up to the present all well-managed gardens will have been kept closely cropped, but now Peas, Beans, Cauliflowers, and various other root crops are being cleared. There is not much available labour for trenching, but deep digging will improve the ground should deeper cultivation be impossible. Those who find that their ground can be most readily sown or planted directly after digging are quite justified in deferring the work of digging until the spring. The peculiarities of each particular garden have to be studied by those in charge, and no general rule can be laid down. The majority of soils might, with advantage, be dug in the autumn, and especially would I recommend that as much trenching as possible be done each season. Much wheeling of manure may be done with advantage during a dry time in October instead of waiting until frost has hardened the surface. Strawy or comparatively fresh stable manure is best for heavy land, and it should be applied in advance of the cropping season, whereas cow or mixed farmyard manure is to be recommended for light soils. Vegetable rubbish accumulates rapidly at this season, and if properly treated and returned to the garden will prove excellent material for many crops. Charred and burnt refuse is of the greatest value for lightening the ground prior to seed sowing, and greatly assists stiff soil to become more productive.

Carrots. Carrots growing in cold, wet soils should be taken up and stored, as an excess of moisture at this season would cause many of the roots to split, especially if much rain falls after a period of fine weather. Store the roots in a cool, moist position in sand or ashes in a cool shed, or in ridge-shaped heaps in a cool, sheltered situation out-of-doors. Handle the roots carefully and do not bruise them; arrange them in layers with the crowns outwards. The sides should be covered with soil to a depth of 6 inches, and the roots should be further protected in severe weather with a little straw or bracken. In this way Carrots will keep good until late in the spring.

Beet.—These roots should be lifted carefully without breaking them, and stored in a similar manner to Carrots before severe frosts are expected: Beets are more tender than Carrots. The tops should be twisted off, and not severed with a knife.

Globe Artichoke.—Remove all old stems and rough leaves from Globe Artichokes and break up the ground between the rows. Protect the roots in very cold weather with long litter or bracken.

THE ORCHID HOUSES.

By J. COLLIER, Gardener to Sir JEREMIAH COLMAN, Bart., Gatton Park, Reigate.

Seasonable Remarks.—Every effort should be made to secure the thorough ripening of the growths and pseudo-bulbs of the plants in each division, by removing the permanent shading and by reducing the interval between lowering and rolling up the blinds. It is impossible to give precise directions on the subject of shading, for much depends on the kind of plants grown. In any case, the reduction should be gradual, the object being to cause the foliage to become hardened, so that little shading will be necessary after the middle of the present month. The amount of moisture in the atmosphere should be regulated with extra care until after fire-heat is more extensively employed. The cooler houses will require damping the least, because there will be less evaporation in these structures. In the warmer houses sufficient atmospheric moisture must be promoted to counteract the effects of fire-heat. The East Indian, Cattleya, and Mexican houses will require to be damped on mornings and afternoons.

while the intermediate and cool houses, in which very little fire-heat is employed at present, should be damped only in the mornings, except on bright days, when the paths and stages should be sprinkled in the afternoon. Watering and spraying the plants must be carried out according to their various stages of development, with due regard to the weather, while the compost used also makes a great difference in the amount of moisture required. Plants with pseudobulbs nearly completed should receive a gradually diminishing supply, but water must not be withheld to such an extent as to cause shrivelling, whilst plants that are still in active growth should be afforded an adequate supply of moisture.

Fire-heat and Ventilation.—As the nights become colder it will be necessary to provide extra fire-heat; on warm days the ventilators should be opened slightly to prevent scorching of the foliage, but retain as much sun-heat as is practicable. A cool, damp autumn is most suited to Odontoglossums, and the plants are developing vigorous growths. The houses in which they are grown should be ventilated very carefully at this season; the air should be admitted through the bottom ventilators, regulating the amount at all times in accordance with the outside temperature. During warm nights the top ventilators may be opened slightly to admit the autumn dews that are very beneficial to Odont. flowering, and especially those that have been freshly potted.

THE HARDY FRUIT GARDEN.

By JAS. HUDSON, Head Gardener at Gunnersbury House, Acton, W.

Early Pruning, and Cleansing of Trees. This work should be done earlier than usual this autumn; it will not be too soon to commence immediately the leaves begin to fall. Start with the pruning and get this work done as quickly as possible. Afterwards proceed with the dressing of the trees, where needed, against insect pests. American Blight was probably never so troublesome as this year, and strong measures will have to be taken to destroy this pest. A wash may be made of 4 oz. of soft soap to 1½ gallon of hot water; this steeds is penetrating and effectual. I intend to give a trial later to a wash made of 2 lbs. of caustic soda (98 per cent.) in 10 gallons of water. Paraffin emulsion is another good remedy; it is made of 1 gallon of paraffin, 1½ lb. soft soap, and 10 gallons of water; this wash is suitable for use in winter only. Lose no time, now that October is here, to renew the grease proof bands against the Winter Moth. These can be purchased at a nominal figure in readiness for use, and are easy of application. When these are carefully fixed apply the grease prepared for the purpose, and renew it as may be found desirable. Clear all fallen leaves from round the trees and lightly remove the surface soil, then apply some freshly-slaked lime, adding a light dressing of fresh soil. If American Blight is suspected of having attacked the roots apply a soil steriliser and use this as recommended by the makers.

Alpine Strawberries.—New plantations of Alpine Strawberries should be made as early in October as possible. Let the plot that is allotted to these fruits be trenched and manured, but not necessarily with strong dung; nothing is better than well-decayed leaves. Let the ground be well broken up in the process of trenching. Proceed to plant the young stock as soon as possible after having trodden the ground and raked the surface level. Where Strawberries grow freely allow 2 feet between the rows and 1½ foot between the plants. Water them at once and rake over the ground. Remove any runners that have developed, and plant them with a good ball of soil at the roots.

PLANTS UNDER GLASS.

By E. HARRISS, Gardener to Lady WANTAGE, Lockinge Park, Berkshire.

Dielytra spectabilis.—This is a most useful plant for forcing, and requires very little fire-heat. Place the clumps in 7-inch or 8-inch pots, water them thoroughly, and plunge them in ashes out-of-doors till growth commences. The plants should then be brought into a light, airy greenhouse and placed near the roof-glass.

Chrysanthemums. — Plants needing disbudding should be gone over regularly, removing the side buds when they are large enough to handle. The pots are filled with roots, and strict attention to watering is of great importance. The plants are also in need of plenty of stimulants till the flowers are expanded. Houses containing Chrysanthemums which are developing their flowers should be kept dry, or many of the blooms will damp, and especially the large show varieties. Stimulants should be withheld from these large flowering plants when the blooms are expanding.

Campanula pyramidalis. Young plants of the Chimney Campanula which are sufficiently well rooted should be potted without further delay. Older plants should also be repotted if necessary. Plunge the pots in a bed of ashes in a cold frame, and water the roots very sparingly for the present. Admit an abundance of air whenever the temperature is above freezing point, for a close atmosphere would cause the loss of much of the foliage. The lights may be removed entirely during favourable weather.

Primula.—The latest plants of greenhouse Primulas should be potted as soon as they are ready for this operation. Place them in 5-inch pots, and use a light, open compost. Stand the plants when potted on a shelf or stage near the roof-glass in a shallow pit for preference. Use fire-heat sparingly at all times. Should severe frosts threaten cover the glass with mats. The earliest plants should be well rooted, and a little weak manure may be given them once or twice weekly.

FRUITS UNDER GLASS.

By W. J. GRIST, Gardener to Mrs. DEMPSTER, Keele Hall, Newcastle, Staffordshire.

Early Vines. In most gardens early Vines were started after Christmas this season, and earlier instructions on that will again prolong the resting season. For these reasons it is not advisable to prune the vines freely until they have quite cast their foliage. In the meantime all laterals should be cut well back, taking care to leave a reasonable length of the ripened wood with the main leaves intact, these being necessary to feed and perfect the buds for next year's fruiting. The roots of vines in inside borders should not suffer for want of moisture; on the contrary, it is advisable to protect outside borders from excessive rains. Ventilate the house both day and night, and dispense with fire-heat entirely.

Late Grapes. Late Grapes should be ripe and the temperature of the vinery should be lowered but kept steady. With shortening days and declining sun-heat fire-heat will be necessary to assist Grapes to finish their ripening, for unless the bunches are well finished during the next week or so there will be some difficulty in keeping them in good condition during the winter. A brisk temperature and dry atmosphere (the more air in reason through the early part of the day) are the two essentials to well-finished bunches; moreover, this treatment will be of material assistance in thoroughly ripening the wood. If not already done, all lateral growths should be removed, that the main foliage may have every ray of light. Care must be taken not to rub the bloom off the bunches when removing dead leaves or decaying berries. Any necessary watering or damping should be done early in the day, when ventilation and fire-heat are sufficient to dry all moisture. A lower night temperature may follow with safety, provided the atmosphere of the house is quite dry. Excessive rainfall in some districts makes it necessary to cover outside borders with galvanised iron sheets or other material. If the inside borders are dry there should be no hesitation in giving the roots just sufficient water to keep the vines active until the Grapes are cut, but the watering must be done in the forenoon of a bright day, for on no account should the house be closed with sun-heat and moisture, to cause condensation of moisture on and consequent sweating of the berries.

THE FLOWER GARDEN.

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

Late Cuttings.—One cannot make too much of Violas, Nepeta Mussini, Lavender, and Pentstemons in these stressful times, and cuttings of all of them dibbled into light, sandy soil in cold frames will root freely, and be ready for planting permanently by next April. Usually no watering will keep the soil in good condition until February, but a light shading is desirable for a week or two during the middle of each fine day. Cuttings of Carnation Ruby Castle, still one of the best bedding varieties—may be propagated similarly, and the variety Duchess of Fife roots freely treated in the same manner.

Rose Cuttings. The Wichuraiana section and some of the old-fashioned kinds of Roses are easily increased by cuttings inserted in the open ground at this time. Matured shoots a foot in length should be selected, broken off with a heel, and inserted quite 6 inches in depth. They should be made thoroughly firm in the soil, and hen ordinary frost will loosen their hold. Where the lovely Rosa hemisphærica succeeds, and is on its own roots, suckers may now be detached and planted in beds, but without cutting back the tops, though long roots should be shortened.

Planting Shrubs. Any shrubs that have been prepared for transplanting should be moved without delay, and afterwards young or nursery stock should have similar attention. Shrubs properly planted about this time of year require no attention in the future to induce them to live, which, apart from a great saving of labour, also saves worry. If the soil is dry a soaking of water will be of great advantage, and, of course, all shrubs large enough to suffer from wind storms must be staked, large ones needing three stakes, inserted at an angle and meeting together at the stem of the plant.

THE APIARY.

By CHLORIS.

Winter Trouble. During the winter those who have not painted their hives thoroughly during the autumn may find leaks in the roof after continued stormy weather. They may be dealt with as follows: Remove the roofs occasionally after heavy rains, and having located the leak rub in with a paint brush gold size, which can usually be purchased at the colour shops. If the crack be wide stop with putty or white lead, and then stretch a piece of calico over it and paint with gold size until better weather prevails. All quilts which have been wetted by rains should be removed, and replaced by dry ones. For warmth, as a winter wrapping after putting on good fitting quilts with a sheet of brown paper between the two layers of quilts, put on a cushion lightly filled with shavings, dry leaves, Corn husks, or cork dust, and the bees should be very cosy during the most trying weather.

Overhauling. All tools used in the apiary should be carefully overhauled before putting them away, and veils, smokers, and utensils repaired so that all may be in readiness for another season. Those who have time and wood may be usefully employed during the coming winter in making new hives, new sections, and shallow frame racks; those who are not so capable in handiwork and desire to enlarge their apiary next year, should place orders for new hives with the makers to ensure an early delivery. Those who can do so will be wise if they fit up sections and frames with foundation in readiness for next year, as those prepared now will be more perfectly done than those which are attended to in the busy season. Those who adopted the system of note making during the busy time will readily admit the need of early preparation, for experience will have taught them its value. Many mistakes would be avoided if a notebook were kept, and the hint jotted down when discovered, besides becoming a valuable guide in years to come, because it is surprising how soon one forgets a valuable idea when the need for its use has passed.

EDITORIAL NOTICE.

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

Special Notice to Correspondents.—*The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.*

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

APPOINTMENTS FOR OCTOBER.

MONDAY, OCTOBER 7—
Nat. Chrys. Soc. Floral Com. meet at Essex Hall, Essex Street, Strand

TUESDAY, OCTOBER 8—
Royal Hort. Soc. Com. meet. R.H.S. Exhibition of British-grown Fruits. Horticultural Club, luncheon, 1 p.m.

MONDAY, OCTOBER 14—
United Hort. B. & P. Soc. Com. meet

TUESDAY, OCTOBER 15—
Brighton, Hove, and Sussex Hort. and Food Production Soc. Fruit and Vegetable Exhibition at Royal Aquarium, Brighton (four days). Croydon Hort. Mutual Imp. Soc. meet. Southampton Roy. Hort. Soc. Autumn (Food Production) Show (two days).

MONDAY, OCTOBER 21—
Nat. Chrys. Soc. Floral Com. meet at Essex Hall, Essex Street, Strand; Exec. Com. meet., 35, Wellington Street, Covent Garden.

TUESDAY, OCTOBER 22—
Royal Hort. Soc. Coms. meet

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 51.5°.

ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, *Wednesday*, October 2, 10 a.m.: Bar. 30.2, temp. 52°. Weather Slight rain

SALES FOR THE ENSUING WEEK.

TUESDAY—
Clearance sale of Greenhouses, Piping, Vans, and other effects, at The Nurseries, Hall Green, Birmingham, at 12 o'clock.

WEDNESDAY—
Sale of Bulbs at 67-68, Cheapside, at 1 o'clock.

Grow More Fruit.

The failures of the present year's fruit crops are likely to be remembered long both by those who grow fruit and those who do not. The former have suffered from poor crops and controlled prices, and the latter have had to pay dearly for any fruit which they were able to buy. It is not the intention of this article to discuss the difficulties and hardships with which the grower of fruit has this year had to contend, but rather to urge the importance of growing more fruit by all those who have the land and labour to spar for this purpose. There can be little doubt but that all the fruit which we can produce will be wanted during the next few years. The shortage of tonnage, which will persist for some time after the war, will mean that the home grower is not likely to be handicapped by large competition from abroad; and the fact that considerable numbers of pulping stations have been established in different parts of the country should offer some guarantee to the grower than even if we have bountiful fruit harvests in the coming year there will be less wastage than has hitherto been the case. Manifestly there are two ways in which more fruit may be secured. One is to ensure a larger yield, by careful treatment of existing plantations; and the other, of course, is to increase the acreage under fruit.

We have already urged the desirability of the increased planting of Strawberries and of Raspberries, and we believe that the Food Production Department has addressed a memorandum on this subject to Agricultural Executive Committees commending to those bodies the desirability of encouraging the planting of quick-yielding fruits. Needless to say, the shortage of labour makes it difficult for market fruit growers to do much in the direction of increasing acreage; but now that they know that the county authority responsible for supervising food production is prepared to encourage in lieu of discouraging fruit production, it is to be hoped that they will do all they can to meet the nation's requirements in this respect.

With regard to the former of the two ways already mentioned of increasing production—by careful attention to existing plantations—it cannot be gainsaid that controllable pests and diseases are more prevalent than they should be, and that they were in no small part responsible for some of the failures of the past year. Those, for example, who took the precaution to spray with arsenate of lead in the spring of this year have, at all events in numerous cases which have come under our notice, reaped an exceeding rich reward. Grease-banding—which should be completed by the end of the first week in October—is not practised as generally as it should be, and yet in the case of standard and half-standard trees it is a measure of prevention of caterpillar attack which cannot be neglected with impunity.

The spread of Silver Leaf disease in Plums, and the widespread ignorance of the symptoms and seriousness of the disease, are calculated, if not arrested and corrected, to reduce the Plum harvest very considerably. At the present time it is not easy in some districts to find a garden entirely free from Silver Leaf, and we ourselves have seen many hundreds of affected trees the owners of which were unaware of the nature of the disease from which the trees were suffering, or of the importance of cutting diseased branches back to healthy wood.

Owing to the large numbers of gardeners now serving with H.M. Forces, the standard of cultivation in gardens is standard of cultivation in gardens is bound to be lower than it was in peacetime, and hence it behoves everyone who can preach the gospel of "keeping orchards clean" to do so.

The Food Production Department has recently appointed a number of experienced fruit growers to undertake propaganda work on this subject, and we learn with pleasure that this step is being welcomed by professional growers, who thoroughly realise the need for raising the general standard of fruit cultivation in the country. The large growers, of course, need no instruction on the subject of orchard sanitation, but they are aware that the more general are the measures taken to control orchard pests the less will be the likelihood of epidemics of disease.

Lastly, owners of gardens who have had the misfortune to lose their more highly skilled men can do a good deal to secure better disease-control in their own gardens. The leaflets published by the Food Production Department on the means of controlling orchard pests give simple instructions, and by procuring these leaflets from the Board of Agriculture, studying them themselves, and handing them on to their improvised staff, they can spread valuable information, thereby assisting in increased fruit production.

Horticultural Club Luncheon.—Members intending to be present at the luncheon on the 8th inst. are asked to notify the hon. secretary, Mr. G. F. TINLEY, 41, Wellington Street, Strand. The luncheon will be held at 1 p.m. in the dining-room at 2, Whitehall Court, where the Horticultural Club now meets.

Sugar from Stevia Rebaudiana.—In the *Anales Cientificos Paraguayos* Dr. M. S. BERTONI gives an account of a very interesting plant named Stevia Rebaudiana, a somewhat rare species found in the highlands of San Pedro, Paraguay. It appears that the leaves of this Composite contain a property about 180 times sweeter than Cane sugar. This substance is unfermentable, has not the toxic effect of saccharine, and can probably be put on the market at a lower price than saccharine. It is not suggested nor anticipated that this sweetening material will take the place of Cane or Beet sugars, but it is expected to prove valuable for medical purposes. An interesting point is that the dried leaves retain their sweetening power indefinitely and may be used in a powdered condition.

Vitality of Gorse Seeds.—In an interesting letter to *Nature* Mr. J. PARKIN, The Gill, Brayton, Cumberland, writes: "Some forty acres of Gorse- and Heather-covered land situated near my home in the plain of Cumberland were drained, cleaned, and ploughed in 1893. This area was kept in arable rotation for a number of years; then part of it was laid down in grass in 1904, and the remainder in 1906. It soon became evident that this new pasture would rapidly revert to a Gorse-covered common unless drastic measures were taken to rid the ground of the numerous Gorse seedlings, which had sprung up from the seeds brought to the surface by the last ploughing. These were stubbed out, and in two or three years' time the ground was entirely free of Gorse plants, and has continued so for the ten or more years it has been allowed to remain in permanent pasture. Last winter this land was again brought under the plough by order of the local War Agricultural Committee, and was sown with Oats. The crop has now been reaped, and Gorse seedlings, 6 inches or more in height, are to be seen scattered over the stubble, being especially abundant where originally the Gorse grew strongest. Evidently, then, the last ploughing has brought to the surface a fresh lot of seed."

Importation of Plants and Seeds into British India.—The Department of Agriculture of the Government of India has, under the Destructive Insects and Pests Act, 1914, placed the following restrictions on the importation of certain plants and seeds into British India:—(1) No plant may be imported into British India by means of letter or sample post. (2) No plants except fruits and vegetables intended for consumption, no Potatos and no Sugar Cane may be imported into British India by sea except after fumigation with hydrocyanic acid at one of the following "prescribed ports"—Bombay, Calcutta, Dhaneshkhodi, Karachi, Madras, Negapatam, Tuticorin, and Rangoon. This provision

does not apply to plants imported under the special certificate of the Imperial Entomologist to the Government of India for experimental purposes. (3) Potatos imported into British India must be accompanied by a certificate from the consignor declaring the district and county of origin, and guaranteeing that no Wart Disease is known to exist on the land where the Potatos were grown; also by an official certificate that no case of Wart Disease of Potatos has been known to exist during the previous twelve months within five miles of the place of where the Potatos were grown. In the United Kingdom, the proper officer or authority for the issue of this certificate is the Board of Agriculture and Fisheries for England, or the Board of Agriculture for Scotland; and the Department of Agriculture and Technical Instruction for Ireland. The following rules for the disinfection of plants imported by sea into Calcutta have been issued by the Governor of Bengal in Council under the Destructive Insects and Pests Act, of 1914: (1) It shall be the duty of the Customs staff to conduct the operation of disinfection of plants at their entry at the port of Calcutta. (2) The fumigation of such plants by hydrocyanic acid gas shall be in accordance with the instructions received from the Imperial Entomologist, Pusa.

Publications Received.—***Rats and Mice as Enemies of Mankind.*** By M. A. C. Hinton. With 2 plates and 6 text figures. (London: Printed by order of the Trustees of the British Museum.)—***Can Biologic Forms of Stem-rust on Wheat Change Rapidly Enough to Interfere with Breeding for Rust Resistance?*** By E. C. Stackman, John H. Parker, and E. J. Piemeisel. Reprinted from *Journal of Agricultural Research*. (Washington: Government Printing Office. 1918.)—***Preparing Rabbits for the Table and Market.*** Board of Agriculture and Fisheries, Food Production Leaflet No. 30. Free.

ON INCREASED FOOD PRODUCTION.

STORING VEGETABLES.

Certain root crops should be lifted and stored in autumn; others may remain in the ground until required for the table. The flavour of the Jerusalem Artichoke is retained better in the ground than under storage conditions. If a portion of the growing crop is covered with straw the roots may be lifted during times of severe frost. The Parsnip becomes bitter, tough and stringy if it is lifted and stored, and is therefore best left in the ground. If it is necessary to clear the ground of this crop the roots should be lifted and buried in sand at the base of a north wall or in some other cool situation. Potatos need to be stored in a frost-proof place, and should be lifted from the ground when ripe. After lifting, the tubers should be laid on the ground to dry for a day or two. Though it may not be absolutely necessary, it is certainly beneficial to store the tubers when they are dry. If a store pit or clamp is used the height of the tubers in the pit should not exceed 4 feet. A little freshly slaked lime worked in as the clamp is made will act as a deterrent to worms and woodlice, and help to keep the interior of the clamp in a sweet condition. Straw and soil are the materials used to exclude frost, light and water. Straw should be laid on the tubers to a thickness of about 4 inches. It is seldom necessary to place more than 4 inches of soil on the straw before Christmas. The most severe frosts occur in January and February, and more soil is then required to cover the clamp. In very wet districts it is advisable to conduct water from the clamp by means of a small gulley. Rats often do considerable damage in Potato pits. The usual methods of exterminating these pests should be employed, with the exception of poison. I do not think there is any better method of storing Onions than hanging them in ropes. Onions keep well in a frost-proof, dry structure. The bulbs should be thoroughly dry when harvested. The winters are so severe that Beet must be stored in northern districts. Great care should be employed in lifting this vegetable, as damage to the root-fibres causes bleeding and deterioration of quality. Beet keeps well in coarse sand; the roots and sand may be arranged in alternate layers, in an open shed. Do not cut off the tops, but remove them by twisting. This is a good but effective preventive of bleeding. Carrots may be stored successfully in the same conditions as those advised for Beet. Vegetables should be harvested in genial weather conditions. The work should be pushed forward on dry days, for I am certain from experience that crops keep much better when laid away dry.—*Geo. H. Copley, Hatton Park, Bradford.*

FINE CROPS OF POTATO KERR'S PINK.

Our local (Redditch) Horticultural Society's Potato-growing competition for cottagers and amateurs has again been an unqualified success, chief interest being centred in the class for the best crop obtained from 1 lb. of Kerr's Pink cut into twelve sets. The seed tubers were obtained from Edinburgh, carefully weighed, put into 1 lb. bags, and handed to the competitors early in the year. The crop was lifted and weighed on August 23. Mr. Levi White won 1st prize with 7½ lbs. ware size and 1 lb. small; the winner of the 2nd prize had 5¾ lbs. ware, 2½ lbs. small; the 3rd prize set gave 5¼ lbs. ware and 2 lbs. small, the latter including one diseased tuber, the only one seen during the course of a long and trying day's judging. Thirteen growers had crops of 6 or 5½ lbs. each from the pound of "seed." The twenty two competitors produced a total of 73½ lbs. ware size, and 22¼ lbs. small, the average crop being reduced by one crop giving 10¼ lbs. and another 19½ lbs.

Mr. Avery, of Finstall Park, who judged these competitions with me, was impressed with the small proportion of small tubers. Kerr's Pink is a good Potato, and crops and cooks well. The competitive Potatos were grown in a widely scattered area, some on light soils, some on heavy, so that the test was a fair one as regards the suitability of the variety for the district, but opinion among growers seemed divided some liking its appearance whilst others seemed to think it would not take the place of older varie-

Photograph by E. J. Wallis.

Fig. 62.—ABIES FIRMA AT WORDEN.—WHEN MEASURED IN 1911 THE TREE WAS 29 FEET HIGH. (See p. 147.)

ties. The habit of growth is quite distinct from all others, being very tall and upright. Some readers may suggest that the Potatos were lifted early, but the cottagers were anxious to get their crops lifted owing to wet weather following a long period of drought, and they were right, as second growth had already started except in three cases. The Potato crop in this locality is good, and very little disease has so far been observed. A similar competition last year made Great Scot popular in the district, and it figured largely in the plots grown for competition. Some growers complain that this variety is coarse and does not keep well; personally I have not found it so, for with me it has kept well until July.

Ten competed for the best 10-yard row of early Potatos, to be judged the first week in July, and this proved to be an interesting test as to the merits of close or wide planting. One grower had thirty-six sets in the 10 yards; another only fourteen. It was decided that the fairest way to judge this class was to count the roots or sets in each row, lift three roots, weigh the produce, and estimate the total weight. The winner had twenty-six sets, and the estimated crop was 48 lbs. ware size, 5½ lbs. small, variety Midlothian Early; the 2nd prize crop had fourteen sets, estimated crop 47 lbs. ware size, ½ lb. small, variety May Queen; 3rd, twenty-two sets, estimated crop 44 lbs. ware size, 6½ lbs. small, variety Midlothian Early. Sharpe's Express is scarcely early enough for this competition, but it is still one of the best of Potatos, if not the best, for cooking quality, and no early variety out of the many I have tested is equal to it in the third week of July. Multiplicity of varieties in a garden means increased work, and this is to be avoided in a time like the present.

Next season I shall grow for my earliest Webb's First Crop, followed by Sharpe's Express, Great Scot, Majestic, and Lochar. Kerr's Pink has such vigorous growth that I am just a bit dubious as to its suitability for garden cultivation. Majestic is in front of it. Epicure, as grown locally, is not worthy of its name. For some years I have relied on King Edward VII. for the main crop, and again this year it has cropped well, but unfortunately it has given us half a-dozen tubers affected with the wart disease, so I am afraid we shall have to discard it. This season has again demonstrated the value of Scotch seed in a remarkable way, for in nearly every case in which I have been consulted with regard to a failure or partial failure of the crops the cause could be traced to planting worn out sets. The extra cost of seed from the North is more than repaid by the increased yield. *James J. Graham, Hewell Gardens, Redditch.*

HOME CORRESPONDENCE.

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

Apples in Public Parks and Gardens.—To increase the production of home-grown fruit in the neighbourhood of towns, some corporations are planting fruit trees in those of their parks which are largely visited. Such an object-lesson cannot but do good. At Bournemouth the Corporation has planted both standard, trained, and bush-grown trees in groups and singly on the grass in the beautiful gardens in the centre of the town, where the progress of the trees can be watched. Apart from the educational side of the subject, there is a fascinating beauty in Apple trees when in full bloom, and also when laden with fruit, especially such varieties as Gascoyne's Scarlet Seedling and Worcester Pearmain. The planting at Bournemouth was placed in the hands of the able Parks Superintendent, Mr. Stevenson, who has had charge for thirty-two years. The natural soil and situation are not entirely favourable to fruit culture owing to the wet subsoil, but with his usual forethought Mr. Stevenson carefully prepared a station for each tree. Considering the trees were not planted until March their progress has been remarkably good, and they bid fair to be a success and prove an additional attraction to the numerous visitors. *E. Molyneux.*

"Rogues" among Potatos.—As my firm's name is mentioned by Mr. Jackson in his letter on p. 122, I am writing to say that Mr. Jackson sent us, in the autumn of 1916, some tubers which he said had been grown from a new variety he had raised, and which was the same about which he had had an interesting correspondence some years ago with Mr. Martin Sutton, who at that time was unable to identify the variety. These tubers were carefully planted in our trials side by side with several hundred other stocks, but the only note we were able to make was that the variety resembled Up-to-Date, and the crop was a very poor one. At the moment of writing I am unable to refer to any reports of trials made of tubers sent some years previously. My principal object, however, in writing, is to say that the quotation which Mr. Jackson gives from Darwin's *Variation of Animals and Plants under Domestication*, chapter 11, p. 410, absolutely confirms all that Mr. Cuthbertson said in his letter which appeared in the *Gardeners' Chronicle* for September 13, as the only instances which Darwin gives of bud variation are those which refer to the colour of the skin. All Potato growers of experience know perfectly well that certain sorts do produce variations in the colour of the skin, and that other examples, such as the Old Rector of Woodstock, which gave a Potato the skin of which was mottled purple and white, might also have been named. The fact remains that in all such cases there is no change whatever in the identity of the variety, and it would be absolutely impossible to distinguish the plant which bore tubers differing in colour from the original stock, if grown side by side under precisely the same treatment and from seed tubers grown on the same soil the preceding year. Not only would the haulm be absolutely identical, and the flowers (if flowers were produced), but the shape, texture, and yield of tubers also. Most of us remember the interest aroused some years ago by Monsieur Labergerie, who claimed that the wild Solanum Commersonii had given rise by bud-mutation to a large, coarse-growing red or violet skinned Potato, the crop of which I saw growing in the South of France, protected by a high fence, and guns so arranged that any attempt to enter the enclosure would fire them. The experiments, however, made by the late M. Philippe Vilmorin at Verrières, and by myself at Reading, prove conclusively that this so-called bud-mutation was nothing more or less than the Blue Giant introduced by Polsen in Germany, stray tubers of which had evidently found their way into Labergerie's garden. I also visited Professor Heckle's Trial Grounds at Marseilles in order to examine some of the "mutations" which he claimed to have raised from Solanum Commersonii with the aid, as I was informed, of liberal dressings of poultry manure, but it was not apparent that any of the so-called "mutations" had arisen under suitably controlled conditions. It is quite clear, moreover, from the instances which Darwin gives, that the only kind of bud-mutation he had in mind was that which gave a difference in colour of the skin of the tuber, and many of your readers may remember that the white sport from Fortyfold was always known as White Fortyfold, and the same held good with the white sport from Beauty of Hebron, which was always known as White Beauty of Hebron. *Arthur W. Sutton.*

Brunton, of Birmingham. — Among the several Trade Cards reproduced in the *Gardeners' Chronicle*, November 20, 1915, was one (p. 319) of J. A. Hunter, of Birmingham. Like most other Trade Cards, it had no date, but it obviously dated from the latter part of the eighteenth century. The recent publication of "A Catalogue of the Birmingham Collection" in the Public Library at Birmingham enables me to approximately date the Trade Card, for the library contains three Catalogues of the firm. The earliest of these is a "Catalogue of Plants, Botanically Arranged According to the System of Linnæus"; it was issued by John Brunton and Co., 83, High Street, Birmingham, 1777. The second was one of forest and fruit trees, and is dated 1782, when the firm was Brunton and Forbes. Five years later the same firm had become Brunton, Forbes and Hunter, and as such it issued another Catalogue of trees. I have the Trade Card of the firm as it stood in 1787, and also one of the still later metamorphosis when J. A. Hunter was sole partner, and it is the latter which is reproduced as above stated. The shop in Birmingham appears to have always been in High Street, but the number of the house was successively 83, 25 and 18, possibly the same house with a reshuffling of the numbers. *W. Roberts, 18, King's Avenue, Clapham Park, S.W.*

American Blight (see pp. 50, 77, 92).—That the American Blight is not merely a wound parasite, but is the cause of wounds in which it afterwards resides, I proved as long ago as the summer of 1888, about August. This is corroborated by Mr. Bartlett (p. 50) and *Market Grower* (p. 77). At the time to which I refer I found American Blight on the young shoots of an Apple tree at Chiswick, with cracks in the wood and bark more than 1 inch long. I made sections of the shoot and found the wood distorted and swollen owing to a great development of the parenchymatous tissue, and concluded this swelling was due to the irritation set up by the punctures of the aphides, and was the immediate cause of the splitting. In the 1900 edition of *Thompson's Gardener's Assistant*, in the chapter on Insect and Other Plant Enemies, I wrote the result of my experience as follows: "The insect lives in colonies in the crevices of the bark and on the roots of Apple trees, from whence it spreads to the young wood in summer, and, sucking the juices with its pointed beak, causes the shoots to split open and to form cankerous-looking wounds, in which it lodges, and increases the injury from year to year." During the present month I have also noticed a copious covering of the white woolly matter on the young shoots of young Apple trees on walls, in a Berkshire garden. *J. F.*

SOCIETIES.

ROYAL HORTICULTURAL.

Scientific Committee.

SEPTEMBER 24.—*Present:* Mr. E. A. Bowles, M.A. (in the chair), Sir Everard im Thurn, Messrs. W. Hales, J. W. Odell, E. J. Allard and F. J. Chittenden (hon. sec.).

Primula japonica proliferous.—Mr. Chittenden showed a plant of Primula japonica from Wisley in which the flower scape bore a leaf about 2 inches above its origin and in its axil a well-developed plant, so that the resulting growth appeared almost like a runner from the old plant.

Aberrant Maize.—Mr. H. Cowley sent a portion of a staminate inflorescence of Maize the main branch of which bore at its apex several pistillate flowers in a group.

Helenium autumnale.—Mr. Wood, of Ashtead, sent inflorescences of Helenium autumnale virescent and with numerous lateral proliferations which usually accompany virescence in this plant. Similar growths have been figured in the Society's *Journal*.

WINDSOR, ETON, AND DISTRICT HORTICULTURAL.

SEPTEMBER 28.—The second annual show of the Windsor, Eton, and District Horticultural Society, for the encouragement of increased food production at Windsor, Clewer, Old Windsor, Eton Wick, and Datchet, was held on Saturday, the 28th ult., at the Royal Albert Institute, and the exhibition proved entirely successful.

The championship of the show was gained by Mr. A. COOMBS, of 20, Bexley Street, Windsor, for an excellent collection of six vegetables, including Michaelmas White Cauliflower, Royal Favourite Leeks, A1 and Ailsa Craig Onions, Tomatos, Prizewinner Beans, Up-to-Date, Arran Chief, and Factor Potatos. Mr. COOMBS also won the 1st prize in the class for Spring Onions. Another very successful exhibitor was Mr. R. WILSON, of Shaw Farm, who won the 1st prizes for (a) a collection of vegetables (four kinds), and (b) Potatos; 2nd for

Celery, 3rd for Spring Onions, and 3rd for Carrots. Mr G. HAINES, of Old Windsor, was second in the championship class, and he won 1st prizes for Turnips and autumn Cauliflowers, 2nd for Runner Beans, 2nd for the heaviest Marrow, and 3rd for Potatos. Mr. G. SUMNER, of Clewer, Mr. A. G. WEBB, Mr. R. RUSSELL, Mr. A. MINTER and Mr. E. GLASS were other successful exhibitors. In the working gardeners' class Mr R. SAVAGE and Mr. H. T. LAMBERT won the 1st and 2nd prizes respectively with fine produce.

A feature of the show was an exhibit of Apples staged by Mr. J. C. ALLGROVE, The Nursery, Middle Green, Langley. The varieties included magnificent fruits of Rev. W. Wilks, Cox's Orange Pippin, Peasgood's Nonesuch, Ribston Pippin, Golden Noble, Charles Ross, Worcester Pearmain, and James Grieve.

BRITISH MYCOLOGICAL.

THE British Mycological Society held its twenty-second annual week's fungus foray at Selby from September 2 to 14, under the presidency of the Very Rev. David Paul, LL.D., D.D. The meeting was held in conjunction with the Yorkshire Naturalists' Union, and on Monday evening, September 9, Dr. H. Wager, F.R.S., delivered a popular address on Fungi to a large audience consisting of members of both societies. Excursions were made each day to various woods within easy reach of Selby, and, as usual, the mornings were devoted to the examination of the specimens obtained. Probably on account of the previous dry weather the larger fungi were not so plentiful as the field-mycologist could wish, but a number of interesting species were obtained, including Lepiota Bucknalli, L. castanea, Leptonia incana, Inocybe Godeyi, and I. rhodiola. Records were also made of a number of parasitic fungi causing injury to crops, such as Erysiphe graminis, Puccinia graminis, P. glumarum, P. dispersa, Ustilago Avenae, and Gloeosporium ribis.

On Wednesday, September 11, Dr. Paul delivered his presidential address, "On the Earlier Study of Fungi in Britain," dealing with the earlier mycologists up to the time of Berkeley. Other papers given during the week included two by Dr. H. Wager, on "Spore Colouration in the Fungi" and on "A Fluorescent Colouring Matter from Leptonia incana"; on "Some New or Rare British Parasitic Fungi," by A. D. Cotton; and "Observations on Some Sandflats Fungi," by H. J. Whitlow.

At the annual general meeting of the society, held on Tuesday, September 10, the following officers were elected for the year 1919: President, Dr. H. Wager, F.R.S.; vice-president, Miss G. Lister; general secretary and editor, Mr. Carleton Rea, B.C.L., M.A.; treasurer and foray secretary, Mr. A. A. Pearson; secretary and recorder, Miss E. M. Wakefield. The council for the government of the society consists of the above officers, *ex officio*, together with the following elected members: Mr. W. N. Cheesman, J.P., Dr. J. S. Bayliss Elliot, Professor M. C. Potter, M.A., Sc.D., and Miss A. Lorrain Smith.

IVERK AGRICULTURAL.

SEPTEMBER 19.—A fruit show was held in connection with the annual exhibition of the above society in Bessborough Park, Piltown, Co. Kilkenny, on Thursday, the 19th ult.

Winners of the medals presented by the Countess of Bessborough in the open class for collection of Apples, 6 cooking and 6 dessert sorts, were: 1st, Lady EVA WYNDHAM QUIN; 2nd, Lady IRENE CONGREVE; 3rd, A. G. BOWERS, Esq., J.P.

The principal winners in the single-dish classes (farmers only) were Messrs. A. G. BOWERS, E. DRUMMY, Ballinc; RICHARD DALTON, Jamestown; JOHN ASHWORTH, Piltown; Mrs. EGERTON, Piltown; and Mrs. BEETLE.

Among the outstanding exhibits were a magnificent dish of Apple Annie Elizabeth in Lady CONGREVE'S collection; a grand dish of Bramley's Seedling shown by Mrs. BEETLE in a very strong class for this variety; excellent fruits of James Grieve shown by Mr. N. Tyson and American Mother shown by Mr. A. J. BOWERS. A fine non-competitive exhibit was staged by the Earl of BESSBOROUGH, K.G. A collection of bottled fruits and vegetables was arranged as a centre-piece, and suitably and effectively arranged around it were dishes of cooking and dessert Apples, dishes of Peaches, Plums, Gages, Figs, Grapes, ornamental Crabs, and Tomatos. The exhibit also included various vegetables.

A collection on behalf of the War Horticultural Relief Fund, organised by the Countess of Bessborough, realised the sum of £11 6s.

CROPS AND STOCK ON THE HOME FARM.

LIFTING POTATOS.

NOTHING is gained by leaving Potatos in the ground after this date, especially if there is any suspicion of disease in the tubers. No method is so effective as digging them with steel forks, but where quantities are grown this plan involves too much labour and expense.

I use a Powell Digger, which has a stout iron share that cuts under the tubers and loosens the soil; following this is a set of forks closely arranged, which work in a rotary manner, throwing outward at right angles, the soil and

FIG. 54.—POTATO CROPPING ON THE CRICKET GROUND AT SWANMORE PARK, BISHOP'S WALTHAM.

Potatos. One operator, the two. A square not some 3 feet wide is arranged on a frame, which prevents the tubers going too far, thus making it easier to collect them. The digger is drawn by two horses, a seat attached to a centre pole similar to a grass cutter. The horses take the outside row and return the opposite way, taking the field in convenient blocks of an acre or more. Many pickers are required to keep the digger employed as the tubers are thrown out at last as the horses can walk. Women and boys can do this work quite easily. To expedite the work the pickers collect all the tubers, irrespective of size, into baskets or sacks, and a second collects them. Grading can be done with a machine later on, thus providing employment during wet weather if such is available.

Sometimes too long haulm may inconvenience the digger somewhat, but to obviate this the tops may be cut to the ground level with the grass cutter and then collected and removed or burnt on the ground. Should the share on the digger not be low enough to loosen all the tubers (and I find this season they are deeper set than usual), Planet Grubber should follow the machine.

As a matter of general interest I may state that the estate cricket ground at Swanmore Park was ploughed up and planted with Potatos this year, and the accompanying illustration (fig. 54) shows the crop of Iron Duke when in full leafage.

CABBAGE FOR COWS.

Although grass is abundant, especially where the pastures were dressed in the autumn with basic slag or farmyard manure, it does not now contain so much "proof" as in the month of August, owing to the continuous rains of the last few weeks and an absence of sun. Naturally the milk is not up to the usual standard of quality, and the difference is quickly evident in the quantity of butter produced. Where a contract exists for weekly supplies of butter steps should be taken to make up this deficiency in the quality of the milk. As it is not possible to obtain concentrated cake in quantity, and if it were this is too costly to be liberally employed, Cabbages of the Drumhead type are a good substitute. Cabbages from seed sown in April and planted out early have done remarkably well this season.

Heavy, solid heads are now available, and these, given to the cows in small quantities, night and morning, after milking, either in or out of the cow house, will improve the quality of the milk very considerably, especially if a small amount of good meadow hay can be given during the milking period. Care should be taken to give the Cabbages sparingly at first for fear of tainting the milk until the animals have become used to the change of food.

TESTING MILK.

No matter what breed of cows is kept for milk production, it is a good plan to have the milk from individual cows tested for its butter-fat quality. Milk for sale must contain at least 3 per cent. of butter fat, a minimum which some cowkeepers say is too high a percentage to maintain in a natural way without incurring heavy expenses for artificial food. I do not agree that this standard is too high, and I also think the public should be protected. The remedies for the cowkeeper are three: Feed better; improve the quality of the animals; or add a Jersey or Guernsey animal to the herd, be they shorthorn or cross-bred cows. One cow of the kind noted will make all the difference to the bulk quality of the milk, especially if the natural butter-fat percentage in her milk reaches 6 per cent. The periodical testing of milk may prove that a cow is temporarily unwell, or a cow may prove to give habitually low results, and such an animal should be got rid of, as no more cost is incurred in keeping a good animal than an inferior one.

The testing of milk has brought to light many surprising results. I have known Jersey cows that were looked upon as models of quality give

a butter-fat percentage of 2.5 only, while in others it is common to obtain as much as 5 per cent. to 6 per cent., therefore it will be seen that the testing of milk is an advantage to the cowkeeper, even if he has but one animal.

The Gerber tester is an instrument that can be used at home, but possibly it is too expensive for a small herd. Another method is to send ½ pint of milk, tightly sealed in a *filled* bottle, to the County Council Dairy School, where the test will generally be made for 1s. per sample. The object in *filling* the bottle is to prevent the formation of butter, which would take place if there was a space left owing to the shaking of the milk during transit. *E. Molyneux, Swanmore Farm.*

Obituary.

Frank Harris.—We learn with regret of the death of Mr. Frank Harris, Superintendent of the Stockport Parks. Mr. Harris was formerly gardener to Lady Henry Somerset at Eastnor Castle, but for the past 18 years he had charge of the parks at Stockport. He was 58 years of age, and leaves a widow, but no children. At the interment, which took place at Mottram Church on Wednesday, the 25th ult., many well-known horticulturists were present, also members and officials of the Stockport Corporation.

Dr. B. D. Halstead.—The recent death of Dr. Byron D. Halstead removed an interesting personality from the botanical circles of the United States. He graduated at Michigan Agricultural College, and subsequently occupied the Chair of Botany at Ames College.

TRADE NOTES.

BRITISH FLORISTS' FEDERATION.

At the recent Committee meeting of the British Florists' Federation twenty-three new members were elected, and the suggested Sundriesmen's Sub-Committee was heartily approved. This sub-committee is already busily at work on matters affecting the manure trade. The returns showing how flower-growers have increased food production, both out-of doors and under glass, were considered satisfactory. The position of bulb growers, and the question of fuel for glass-houses, were considered at length, and considerable progress was reported in the preparation of the Market Credit Index.

MR. THOS. ROCHFORD.

The death of Mr. Thos. Rochford, of Turnford Hall Nurseries, Broxbourne, removes a prominent member of the flower trade from Covent Garden Market. As the eldest son of the late Mr. Thos. Rochford, he was largely responsible for the conduct of the business of Thos. Rochford and Sons, Ltd. For some time past he had been in failing health, and no doubt the added responsibility caused by the absence of some of his brothers, who are in the Army, hastened his death, which occurred on Friday, September 27: the funeral took place at Cheshunt on October 1. A magnificent floral tribute of affection and regard was sent by members of the staff at Broxbourne and Covent Garden.

LAW NOTE.

A TENANCY DISPUTE.

An interesting point affecting tenancy was raised at the Lancaster Police Court, when Mr. T. P. Tilly, on behalf of Miss Leeming, of Greaves House, applied for an ejectment order against Joseph Weatherill, gardener, who had occupied the lodge at Greaves House. Mr. Tilly said it was not obligatory on the defendant to occupy the lodge, but he elected to do so. If he had not done so he would have been given wages in lieu of rent. Miss Leeming, in reply to Mr. W. H. Winder, who defended, denied that it was only after the defendant got military calling-up notice and was given a month to get work of national importance (other than looking after Vines and Peaches), that she decided to dismiss the defendant. She was dissatisfied in June and meant to dismiss him, but was away in Scotland. Mr. Winder produced the advertisement relating to Weatherill's appointment, which stipulated "Cottage free," and said if occupation was by virtue of office or service for the more convenient performance of his duties, the Court had no jurisdiction. Mr. Tilly mentioned cases where it was held that occupation rent free as part remuneration was a tenancy, and not a service occupation. The Bench held that they had no jurisdiction.

ANSWERS TO CORRESPONDENTS.

Celery Leaf Spot: *W. F.* The spots are due to the presence of Septoria Petroselinii var. Apii, a fungous disease that has proved very troublesome in recent years. It is hardly possible to effect a cure at this stage, and we doubt whether anything can be done to check the disease now. Another year spray the young plants at intervals from the seedling stage onwards with weak Bordeaux mixture or a solution of potassium sulphide.

Correction: Mrs. Jenner, Wenvoe Castle, near Cardiff, was the winner of the 1st prize in the class for 6 varieties of Onions at the R.H.S. vegetable show on September 24, not Mr. Jones, as stated by our reporter. The gardener, Mr. Wheeler, informs us that the points obtained in this class assisted him in winning the R.H.S. Challenge Cup offered to the exhibitor obtaining the most points in the show.

Cyaniding Vineries and Fruit Houses: *G. N.* Wait until the Vines and fruit trees are dormant, and there are no decorative plants in the houses. For every 1,000 cubic feet use 2½ ounces of sodium cyanide, 5 fluid ounces of sulphuric acid, and 15 ounces of water. Cyanide the houses on two occasions, with an interval of 24 hours. Allow a 50 minutes exposure on each occasion, and arrange for a temperature of 50° to 55°. With reference to the other matter, we advise you to write to Messrs. Strawsons, 71a, Victoria Street, London; and Messrs. W. Wood and Sons, Wood Green, London, N.

Galls on Apple Shoots: *J. W.* The gall-like growths are caused by the larvae of the Pith Moth. These larvae are hatched in late summer, feed for a time on the leaves, and then bore into a bud. Later they get under the rind of a spur or shoot, and remain there for the winter. In spring they tunnel along the spur or shoot, causing the leaves and bloom to wither and die. There is no remedy beyond cutting off flagging spurs or shoots in spring and burning them. This destroys the larvae and prevents them from developing into moths. Any affected wood that may be detected during winter pruning should also be cut off.

Grape Spot: *A. L.* To prevent the spread of Anthracnose, or Grape Spot, disease, caused by Gloeosporium ampelophagum, dust the leaves and shoots with flowers of sulphur mixed with a little quicklime. If the disease persists, give a second application ten days after the first and add more quicklime to the sulphur. If necessary give further applications at intervals of ten days, increasing the amount of quicklime until it is in almost, but not quite, the same proportion as the flowers of sulphur. Washing the rods during winter, while quite dormant, with a solution of sulphate of iron is considered to be a good preventive measure.

Names of Fruits: *E. J. C.* All the specimens represent Cox's Orange Pippin.—*W. P. D.* 1, Warner's King; 2, Gascoyne's Scarlet; 3, not recognised; 4, Golden Noble; 5, Allington Pippin; 6, Bismarck; 7, The Queen; 8, Bramley's Seedling; 9, Winter Greening; 10, probably Mère de Ménage; 11, King of the Pippins; 12, Dumelow's Seedling.—*W. E. A.* Pitmaston Duchess.—*P. and Co.* Red Apple, Cellini; russetty Apple, Ribston Pippin.—*R. E. J.* 1, Fearn's Pippin; 2, Cox's Orange Pippin; 3, Bramley's Seedling; 4, not recognised; 5, Lemon Pippin; 6, Dumelow's Seedling.—*S. S.* Smart's Prince Arthur.—*G. W. M.*—1, Durondeau; 2, Pitmaston Duchess.

Names of Plants: *H. E. B.* 1, Euonymus europaeus; 2, Commelina deficiens.—*J. H.* 1, Nerine Fothergillii major; 2, Pieris floribunda; 3, Gaultheria Shallon.—*L. S. A.* 1, Chrysanthemum uliginosum; 2, Aster var. (Michaelmas Daisy), not in flower; 3, Crataegus punctata var. xanthocarpa; 4, C. coccinea.—*R. Hines.* 1, Hieracium aurantiacum; 2, Phygelius capensis; 3, Potentilla fruticosa; 4, Sisyrinchium striatum; 5, Tradescantia virginiana; 6, Salvia farinosa; 7, Isoloma hirsuta; 8, Liriope spicata; 9, Selaginella Braunii.—*A. T. H.* Acanthopanax aculeatum.

Scab on Apple Leaves: *P. P.* The trouble has nothing to do with the winter spraying of the trees with caustic alkali wash nor with the spraying of the Potatos under the trees. It is caused by the fungous disease Apple scab (Venturia inaequalis). You are no doubt familiar with scab on the fruit. This is the same disease on the leaves. When pruning in winter you may find the disease also on the young shoots, causing the bark to rupture or have a pimply appearance. If so, cut these shoots off and burn them. Use lime-sulphur wash for winter spraying this year, and apply the same wash, but mixed according to the maker's directions, for summer spraying, as soon as the bloom has fallen, and again about a fortnight later.

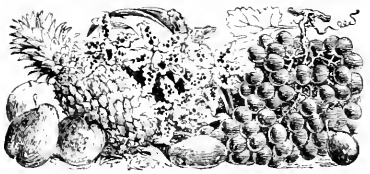
Sugar from Sugar Beet: *J. T. W.* Full particulars of the method of cultivating Sugar Beet and of making syrup from the roots were given in the *Gard. Chron.* of May 18, p. 210. The Food Production Department has issued a leaflet dealing with these subjects, and copies for distribution among local growers may be obtained on application to the Department, 72, Victoria Street, Westminster, S.W.

Transplanting Large Yew Trees: *T. W. B.* Given the proper appliances and requisite care, there should be no difficulty in safely moving and transplanting a large Irish Yew tree 150 years old and 20 feet high. There are numerous instances of similar removals on record, notably by the Messrs. Barron, of Barrowash, and Messrs. J. Cheal and Sons, Crawley. The late Mr. Wm. Barron transplanted many large trees, and a notable feat was the successful removal and transplantation of the famous Buckland Yew, near Dover. The work was done in 1880, when the tree was of huge size and over a thousand years old. The Buckland Yew is referred to in Doomsday Book.

Unhealthy Roses: *H. E.* The evidence is insufficient, but we feel sure the amount of magnesia in the soil is not responsible for the failure. So far as we are able to judge both soil and position are far too dry and hot for Roses, and the importation of heavier soil, with the addition of farmyard manure, would result in substantial improvement.

Winter Rations for Cows: *C. C.* For Jersey cows the winter rations should start at the end of October or early in November, when the cows "lie in." Give 2 lbs. of Bibby's Dairy Cakelettes at the morning feed and the same quantity in the afternoon, just previous to milking, 6 lbs. of long meadow hay in the morning and 10 lbs. in the afternoon, half at milking time and half about 7 o'clock; Mangold, sliced into pieces an inch wide and 4 inches long, but not pulped smaller, 15 lbs. in the morning and the same quantity in the afternoon. Mix 5 lbs. of Cabbage with the Mangolds, both morning and evening. The feed of Mangold and Cabbage should be given after milking, as the milk may have a slightly unpleasant flavour if it is given just previously. Some dairymen consider Mangolds should not be fed to cows until February, as they are injurious until their sugar content is fully developed, and Turnips and Swedes given instead. Where milk is the only aim, there may be little harm in their use, but if butter is made Mangolds are not advisable, as their flavour has a much longer period in which to develop while the cream is ripening.

Communications Received.—D. P.—H. S.—G. M. B.—S. A.—T. J. H. L. K.—A. C. B.—H. G. K.—C. T.—S. K.—W. O.—R. A. W.—H. A.—E. M.—R. E. B.—O. B.—R. P. B.—J.—T. S. C.—E. L. H.



THE

Gardeners' Chronicle

No. 1659.—SATURDAY, OCTOBER [illegible]

CONTENTS.

ILLUSTRATIONS.

MESEMBRYANTHEMUM SIMULANS

MOST persons [illegible] aware that [illegible] some open in the morning [illegible] evening only, and [illegible] in bright sunshine remaining [illegible] times. I am tempted to [illegible] know which it is the [illegible] noted at about their fullest [illegible] time of writing I have two plants of Mesembryanthemum simulans in flower and each accurate time keepers in the matter of opening and closing their flowers that there seems to be something positively uncanny about it. As this species is interesting [illegible] following account may perhaps indicate someone in South Africa to make observations and record if it behaves in the same manner in its native country.

Mesembryanthemum simulans was discovered by Dr. R. Marloth at Kuipdraai [illegible] grows in the region of Aberdeen Road railway station in South Africa. The name simulans (imitating) was given to it on account of the manner in which the leaves by their colour and texture bear a close resemblance to the stones among which it was found growing. Under cultivation the leaves become greener and less grey, so that much of that resemblance is lost. According to Dr. Marloth the plants are becoming exterminated by goats, who "search for them during the dry season." The two plants of M. simulans that I possess were kindly sent to me by Dr. Marloth, and both are in flower as I write. Under natural conditions so many as four flowers are sometimes produced upon a plant in one season, but, under cultivation here, probably one or two flowers is all that can be expected, owing to want of sunlight during the flowering season. The first flower I had opened in the afternoon of August 28, and I found that at 7 p.m. it had closed. Since that date I have watched it closely, and every day for nine successive days it commenced to expand at 3.30 p.m. and closed again at 6.30 p.m., taking nearly an hour to expand fully and about the same time to close. On September 2 a flower on another plant, being ready to open, commenced and finished its operations at about the same hours, but was about ten minutes later than the first flower in starting to open, closed about ten minutes earlier, and behaved in this manner day after day. With the expansion of the petals the flower gives forth a strong and pleasant odour resembling that of Cocoanut. When the flowers first opened they were respectively 1¾ and 1¾ inch in diameter, but the petals increased in length daily, so that finally the flowers were 2¾ and 3 inches in diameter, with the centre a bright yellow, [illegible] petals, [illegible] series, [illegible] Lily of the Valley, [illegible] petals [illegible] first 4·5 days, although gradually [illegible] after the [illegible] petals [illegible] flower [illegible] afterwards the stigmas separate from one another and become very [illegible] the [illegible] lens.

FLOWER OF MESEMBRYANTHEMUM SIMULANS. NATURAL SIZE.

The regular opening and closing of the flowers of this species is quite independent of the [illegible] and [illegible] are sure to [illegible] the flowers opened just the same, with the exception of one day when the temperature only rose to 60°, which was not sufficient heat [illegible] expand [illegible] 3.30 as usual, but only expanded very slightly, remained in that state for its usual period, and closed up at 6.30 "as nothing to plum."

The hours I mention are those of actual Greenwich time, not those indicated by "summer time" clocks, for I believe these plant would refuse to be controlled by any Government, they are probably regulated their actions by certain [illegible] according to real time, and will continue to do so to the end, but by what means they keep and respond to the hour is a mystery [illegible] and [illegible] several other species of the more remarkable genus.

Whilst examining a flower of M. simulans it was visited by one of the pollen-eating flies, probably a species of Syrphus, which was so tame that it allowed me to pick up the pot containing the plant and adjust a lens of short focus so that I could watch it feeding, and a most interesting sight I found it to be. The fly settled on the petals with its head over the stamens, eating some of the pollen then, with its two front feet, it took an anther between them and, by a rubbing motion, proceeded to scrape or squeeze some pollen out, for the flower had evidently but once before and had only just begun to shed its pollen that day. This pollen the fly then began to pick up with its proboscis. Everyone who has a microscope is sure to have seen the proboscis of a blow-fly, and to know what a beautiful object it is. This fly had similar lobes to its proboscis as the blow-fly has, and the manner in which it rapidly picked up the pollen, a few grains at a time, was one of the most interesting sights I have ever seen under a lens. These lobes are as handy to the fly as our own fingers are to us, as it continually pibbles in any and every direction, [illegible] transversely, or obliquely. After feeding for a few minutes upon the pollen [illegible] the anther, the fly then [illegible] cleaning its feet, and [illegible] speed of it commenced to [illegible] some grains that were upon [illegible] before swept off the grains [illegible] the petal by folding the lobes [illegible] and [illegible] both surfaces of the [illegible] in the same way as [illegible] and then upon the upper surface of a leaf and the fingers beneath it, and then with a withdrawing motion proceeded to bring away anything that might be upon the surface. Its motions were too rapid for me to see how it got the pollen into the tube or gullet that extends to the proboscis, but on one occasion it seemed to have picked up a pile of [illegible] grains in a heap, which seemed more than it could swallow at once, and it then appeared to me as if it were rubbing the inner surface of one lobe against that of the other, so in some way, so as to separate the grains, which were soon disposed of.

A very complete description of this species has been published in English the following may be useful:—

M. simulans, Marl. Plant stemless. Leaves, [illegible] very spreading, 2·2½ inches long, [illegible] broad, ¾ inch thick, ovate, acute, [illegible] face, keeled on the back, dull [illegible] or grey-green densely covered with dark green dots. Flower central between the bases of the leaves, very shortly pedunculate or subsessile. Calyx of ovate acute keeled bracts [illegible] below the calyx, coloured like the leaves but more glaucous. Calyx 5-6-lobed; lobes 5-6 lines long, 3-5 lines broad, ovate or ovate-lanceolate, subacute or obtuse, the inner with membranous margins, of a somewhat glaucous green with a slight pink or purplish tinge, dotted with dark green. Flower on the first day of opening 1·2½ inches in diameter, day by day enlarging to 2¾ inches in diameter, commencing to expand about 3.30 p.m. and closing at 6.30 p.m., irrespective of sunshine or cloud if the temperature is not below 70° Fahr., lasting about 12 days, having a strong and pleasant odour resembling that of Cocoanut. Petals more than 150, in 4-5 series, free to the base, spreading in different planes, the outer reniform, 9-13 lines long, 1¾ line broad, linear-lanceolate, either entirely bright yellow on the inner surface or with the basal part white, whitish or pale pinkish on the back, scarcely shining; under a lens the petals are seen to have numerous linear cells of a more translucent nature than the other part, which I at first mistook for glands such as are present in the petals of Mesembryanthemum and M. nutabile, but under a compound microscope I find that they are not glandular cells. Stamens very numerous (over 200), forming a dense cluster 7-8 lines in diameter; filaments white; anthers orange-yellow. Style none. Stigmas 10-12, equalling or a little longer than the stamens, filiform, at first erect and closely clustered together, afterwards (when receptive) separating, spreading, and becoming more or less curly at the tips, yellow. Fig. 51 represents the plant half natural size. The photograph was taken at 1.15 p.m. Greenwich time before the flower had fully expanded. It had opened only once previously to being photographed, and on the two days before the photograph was taken it refused to open at all, as the temperature was below 70° Fahr.

N. E. Brown.

CONFESSIONS OF A NOVICE.

It is a long time since I made a confession, and I feel the consequence of my reticence acutely, for it never happened in any of my many confessions of ignorance that they did not bring me wisdom—not, be it said, of their own virtue, but from the rich stores of the experts who answered my questions. But my silence is only a sign of preoccupation with war work, and by no means an indication of faithlessness to my true love of horticulture. Now, when my days are passed, like those of all of us, in either controlling or being controlled, I am able no longer to ask useful questions—that is, those of which the answers solve either my own or other people's difficulties. To be able to ask these questions means to be at work among the plants, and my great misfortune has been that I have had no time for work in the garden. My gardener often sighs with me in a decorous way for the old times when we laboured together, but nevertheless ascribes the fact that the vegetables are better than they used to be to my abstention from what he calls "our trials." They are so good, indeed, that we get very few of them indoors. Since flowers were abandoned for the garden and vegetables took their place and serve for decoration, only rarely may they be spared for use. Thus I arrive at my subject, which is to congratulate H. H. on his enthusiastic championship of vegetables. The Orchids which he was wont to cherish as the apple of his eye are rejected in favour of Onions, and the Rhododendrons give place to his affections to Runner Beans. What's a Poinsettia to a Potato?

But when H. H., more royalist than the king, urges that Kew should descend from its high estate and, like Diocletian in his old age, grow Cabbages, even I, a novice, must cry beware the enthusiasm of the convert. Kew is to me an Imperial possession with great and wide mission. Its fourfold function is, as I imagine, to foster and develop the economic botany of the Empire, to advance floristic knowledge, to train men in the understanding and love of horticulture, and to show novices beautiful things and how to produce them. If it succeed—and I think that it does succeed—Kew deserves our sincere thanks, and not an added burden which others can well bear—that of growing vegetables. So, in so far as a pupil may criticise a master, I would respectfully suggest that though Kew does well to grow Potatos to win the war, the best thing that it can do when war is over is to reconcentrate its powerful energies on its own great tasks, which will be even more important and onerous than in the past.

But to return to subjects more within my competence. I have been remarkably successful in growing, or rather in introducing and getting my gardener to grow, a Canadian dwarf strain of Sweet Corn. It has matured its cobs perfectly, but the trouble is that when mature they are uneatable, and to catch them in the right unripe stage requires lynx-eyed vigilance. This is a drawback to a "vegetable" which otherwise I believe I should come to like in time. I imagine that the knowledgable can judge either by the state of the tassels or by the feel of the cob when the fruit is ready for gathering. In any case this dwarf strain, which can be planted closely, ripens well enough here, and should be grown by all who have, and who has not?—American friends. A. N.

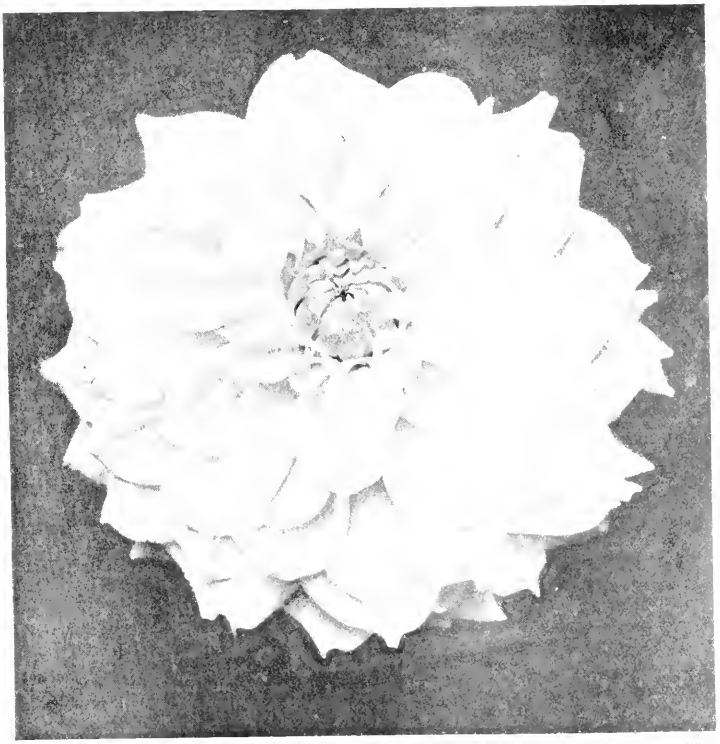


FIG. 55.—DAHLIA MEDUSA: COLOUR PRIMROSE-YELLOW, WITH FAINT SUFFUSION OF PINK AT THE TIPS OF THE FLORETS.

(R.H.S. Award of Merit, N.D.S. First-Class Certificate, Sept. 24, 1918. See p. 175.)

ORCHID NOTES AND GLEANINGS.

LAELIO-CATTLEYA ELIZABETH.

THE first flower of a pretty cross between Laelio-Cattleya Clive (L. pumila praestans × C. Dowiana aurea) and Laelia purpurata Annie Louise, sent by Frederick J. Hanbury, Esq., Brockhurst, East Grinstead, is of special interest, as it demonstrates the fact that fine abnormal colour variations in the parents used may be transmitted to the progeny. The varietal peculiarity in Laelia purpurata Annie Louise, for which the late Mr. Law-Schofield obtained the Royal Horticultural Society's First-class Certificate on May 31, 1899, consisted in the petals (instead of being of an uniform blush-white on pale rosy-lilac) having the greater part of their surface covered with dark rose-purple veining, the lines being merged with a deep magenta-rose tint, only the narrow margins being of the normal colour of the species.

The same characters, in a still brighter tint, appear on the extended lanceolate petals of the new hybrid L. C. Elizabeth, the narrower sepals of which are very light lilac on a white ground. The handsome lip, which has a tubular base indicating L. pumila praestans, is deep maroon-crimson in front, and orange on the centre and base.

POMOLOGY.

PHILOLOGICAL NOTES.

BLOOM.—The origin of this word as given by Johnson, Murray, Skeat, etc., when applied to the delicate powdery deposit on fruits, can hardly be considered satisfactory. For instance, the main suggestion is that it is so called from "a state of greatest beauty or loveliness." In French the word "Fleur" is commonly used, another word being "Pruine," especially for Plums (Littré). Now "Fleur" ordinarily means flower, blossom, or "Bloom," so that we have terms of identical meaning in the two languages, so far as form goes. Littré gives *Bourguign.* Flo, *Picard* flour, *Provenç.* Span., *Portug.* flor, *Ital* fiore, *Latin* florum. Cotgrave (1650) gives the French for bloom, in the present sense, "Fleur, Flour," and the connection between the words becomes obvious when we find that "fleur de farine" means "flower, the finest meale meale dust or mill dust"; or Littré, "Fleur de Farine—la plus belle farine du froment," or Italian, "Fiore di farina"; in other words, bloom on fruit is simply a dusting of fine powder or flour or flower. Seeing that flour and flower are mere variants in spelling the same word, we may take it that insistence on the correctness of "flowers of sulphur" as against "flour of sulphur" fails anyhow, for the spelling should be singular, *i.e.* flower, and at this merely amounts to a sort of super-pedantry.

The varieties of Apples known as "Belle Fleur" deserve a further note. I have an old tree which has been identified by two authorities, and which seems to agree by descriptions, with Brabant Bellefleur. What clinches the diagnosis to my mind is the fact that when well ripened in a good season, and especially during storage, the fruit develops a beautiful "bloom," a feature that is not very common among Apples; this bloom, I venture to think, has given the name "Belle Fleur." Curiously enough, neither Leroy, nor other pomologies that I have consulted, mention the character either for this or for other Belle Fleurs. Can those who have Belle Fleur jaune, etc., in their collections report on the subject?

PRUINE.—"Poussière glaucque cireuse qui couvre certains fruits particulièrement les prunes" (Littré). French writers often describe certain Plums as "pruinée," *i.e.* with bloom. Etymologically Littré gives *Lat.* pruina

= gelée blanche, hoar frost (par assimilation). The German equivalents, Blaue, Reif, Flaum (also = down), and Hauch may be mentioned, and also that the word "mealy"—evidently allied to Fleur or Flour—is applied sometimes to powdered things—for instance, "mealy bug."

THE PERMAINS.—"The Pearmayn, which to France long ere to us was known, Which careful fruiterers now have denizened our own." (1663.) The origin of the word Permain is perhaps not yet adequately worked out. Littré gives "Permaine," name of a variety of Apple in Normandy; etym., *Latin* Permagna, very large. Hogg, *Fruit Manual*, 5th Ed., 1884, p. 169, says: "The term Pearmain, which is now applied to so many varieties of Apples, signifies the Great Pear Apple. In olden times it was variously written Pearemaine or Peare-maine, being the Anglicised equivalent of Pyrus magnus, just as Charlemagne is of Carolus magnus. A Pearmain, therefore, ought to be a long or Pear-shaped Apple." Whether this is an original idea of Hogg, or whether he borrowed it without giving chapter and verse, is not clear, but I am told that such etymology is of an improbable nature, and not in accord with the rules. Further, does a Pear shaped Apple exist? That is the very opposite of the conical shapes which are quite common, in that the narrower part must be at the base or next the stalk end. Another derivation is given by Murray quoting Foerster (1899), from Parmanus, *i.e.*, of Parma; the author may have been obsessed with the German name "Parmäne." This, too, seems hardly likely. The older spellings are more varied than those given by Hogg. Murray gives Parmain, Permayn, Parmeyn, Pearemain and Pet Pear Pair Pare Peer ... many more. It is difficult to visualise what was meant by the older writers. Thus Cotgrave (1650): "Poire Poire, a Peare Apple, a little russet Apple, (as some hold), a 'Peare-maine.'" Mortimer (1707): "The Russet Pearmain partakes both of the Russetting and Pearmain in colour and taste, the one side being generally russet and the other streaked like a Pearmain." Gerarde (*Herbal*, 1633, p. 1459, quoting "Tabernæmontanus" or Jacob Theodor, of Bergzabern, 1520–1590) mentions (5) Platomela sive Pyra aestiva, The Summer Pearemaine and (6) Platorcharia sive Pyra hyemalis, The Winter Pearemaine, but gives no descriptive effort, apart from a suggestion of flat shape.

Knight (*Pomona Herefordiensis*, 1811, Pl. XXIX) figure the Old Pearmain as a medium-sized Apple of an ovoid or elliptical shape, and distinctly without any coned appearance. He quotes Philips as calling it

"The fair Pearmain,
Tempered like comeliest nymph, with red and white."

To the three derivations given above I would add a fourth, the key to which is the two synonyms for the Pear, formerly well known—the Permaine or Warden. Thus (*v.* Murray) we find, 1483 Parmayn *anglice* a Warden: A Parmayntre (a Parment tre) volemus a Wardentre. Cotgrave: "A Warden or Winter peare, Poire de Garde, a peare which may be kept very long." Looking to old French we find the verb "*permer* or *parmaindre*," and later *parmain* from Latin *Permanere* (cf. permanent), which signifies to remain or continue, to have enduring or lasting and durable qualities. Warden, given by Skeat as a large coarse Pear used to baking may have borrowed its size for rhyming reasons from May Trans. of Virgil):—

"Nor must all shoots of peares alike be set
Crustummian, Syrian peares, and Wardens great."

If the similarity in meaning both of Warden and Permain is so great, it is likely that originally when Apples were described as Permains it was neither their size, nor their shape or appearance that led to the name; it was because they were "good keepers." *H. E. Durham.*

HARDY FLOWER BORDER.

THREE UNCOMMON BORDER FLOWERS.

A NARROW border in front of a tropical plant house (No. 1 at Kew is edged with a broad band of Zephyranthes candida in full bloom, its thousands of white, Crocus-like flowers among the dark-green, rush-like leaves being a pleasing contrast to the spokes of Belladonna Lily, which stand on grand array behind it. Nestling close to the wall is Oxalis Bowieana, the largest-flowered and showiest of the South African Wood Sorrels; the blooms are of the brightest pink colour. These three plants are sufficiently hardy to thrive in such a position as that described without any protection in winter, and as they are at their best at this time of year they are eminently suitable for autumn show. The Belladonna Lily is an old favourite, but the Oxalis is known in this country only as a greenhouse plant, while the Zephyranthes has not yet come into its own as a hardy perennial bulb, though it is as easy to cultivate as a Daffodil and is often to be the best of all Crocuses. Moreover, the plant is evergreen, so that it can be used instead of Box as an edging to borders. At Kew it was first planted about 20 years ago, but had a fierce fight, and at one time all but the Box had to be dug up, and ever since the Zephyranthes has flourished there.

ON INCREASED FOOD PRODUCTION.

FASCIATED VEGETABLE MARROW.

A REMARKABLE form of fasciation is a Vegetable Marrow growing on an allotment at Dr. Kennedy Hill's, E. Dulwich, illustrated in fig. 57. It is of the ordinary green climbing or trailing kind, and shows a thin, membranous expansion in the growth of one stem, which is flattened and about ¾ of an inch in width at the base, gradually widening to a maximum measurement of 5 inches, where it is slightly convex and has twelve large leaves in line at right angles to it. The leaves are arranged in lines some distance back from the growing point, with a space of 8 inches between each line, and at the point where the Marrows are attached there were no fewer than eight pistillate flowers, two of which failed to set; another, after setting, turned yellow and dropped off; the fourth is still adhering to the stem, but is yellow and likely to drop, leaving the four fine Marrows as seen in the illustration.

The growing point has turned under the main stem and is forming a ball of twisted and flattened growth enclosing itself in the centre, and no sign of efforts to obtain release is expanding the mass of growth daily.

I may state that this plant is growing on a heap of stable manure, which, perhaps, has something to do with its abnormal growth.

It will be interesting to see if the seed saved from the plant gives seedlings perpetuating the abnormality. *H. G. King.*

POTATO TRIALS AT ST. OSYTH.

A TRIAL of seven varieties of Potatos has been carried out on a piece of waste ground at St. Osyth Priory, which was considered to be too hot to grow any useful crop. We planted 30 sets each of the following varieties on April 5: Arran Chief, Factor, Great Scot, British Queen, Dalhousie, Scottish Farmer, Eclipse, What's Wanted, and Pink Blossom. This is the second year that What's Wanted has been grown at the Priory and the fourth year we have had Pink Blossom. The results from the trial of 30 sets, planted each 2 feet 6 inches between each row and 15 inches between the sets, all unsprouted sets, 1½ oz. in weight, are as follow:

	Thirty sets.	Per acre.		
	Lbs.	Tons.	cwts.	lbs.
Arran Chief	104	21	11	7
Factor	105	21	6	105
Dalhousie	84	17	3	55
Scottish Farmer	100	20	14	54
Great Scot	122½	25	7	75
British Queen	95½	18	12	30
Eclipse	105	21	15	20
What's Wanted	36	7	9	80
Pink Blossom	49	10	5	51½

Last year What's Wanted yielded at the rate of 13 tons 11 cwts. per acre. This trial seems to prove that What's Wanted requires a good, heavy soil, and that the seed tubers require to be well sprouted before planting. I received four tubers of Conqueror and four tubers of a new variety called Conquering Hero from Mr. Dewar, Dankeith, Kilmarnock, Ayrshire, and cut each

FIG. 56.—CELERY GROWN BETWEEN ROWS OF RUNNER BEANS. (See p. 144.)

Potato into seven 1½ oz. sets and planted them with the others, with the following results :—

	Seven sets.	Per acre.		
	lbs	Tons.	cwts.	lbs.
Conquest	30½	27	1	85
Conquering Hero	39	34	12	85

Conquering Hero is a new white, oval-shaped variety, with shallow eyes, and of first-class cooking quality. The lifting and weighing were supervised by Mr. Willmott, schoolmaster, St. Osyth. *P. M.*

INTERCROPPING CELERY BETWEEN ROWS OF RUNNER BEANS.

At Aldenham we have, for some years past, grown Celery between rows of Runner Beans. Three and four rows of Celery are grown on the flat, in well-prepared ground, and blanching is done by means of brown-paper bands. Very fine produce is obtained in this way, the partial shade from the Beans suiting the Celery admirably. The cost of perfecting the crop is much less, and the crop itself more satisfactory for early supplies than when the plants are earthed up with soil in the usual way. Moreover, the roots of the Celery can be kept well supplied with water during times of drought. *Edwin Beckett, Aldenham House Gardens, Elstree.*

SILVER-LEAF DISEASE.

The widely-spread Silver-leaf disease of Plums, Cherries and kindred fruits promises to become an urgent problem for fruit-growers in the near future.

I have only noted Silver-leaf disease affecting grafted trees, and have never seen the complaint on trees upon their own roots. The two points are very closely connected.

Has the stock upon which the trees are grafted any influence in the matter, and has the operation itself any bearing upon the transmission of the malady?

Several cases of Silver-leaf have come to my notice, especially among Plums and Cherries. A large, trained Morello Cherry was lifted and examined carefully. The first thing noticed was a bad union of stock and graft, leaving an open wound, which the tree had apparently endeavoured to heal from time to time, but failed to do so. This wound led to the core of the tree, and doubtless impeded the flow of sap upward, and it also allowed moisture from the stem and surrounding soil to enter the heart-wood.

Sections of the stem showed that the decayed portion of the wood was greatest just above and just below where the moisture entered, but the decay had spread up the tree, not only in the main stem, but also into the branches, though lessening in diameter in its upward course.

At 6 inches above the point of union the decayed surface occupied two-thirds of the section cut through, and the decay had also travelled downward, but not in quite so rapid a manner.

Whether injury to the tree caused by an old wound, with its consequent check to the sap-flow, and the entry of outside moisture when the tree is in a dormant state are sufficient to cause the disease I hesitate to say. No organism was to be observed which might contribute to the trouble, but in any case the injury and wood decay would soon produce an injurious effect.

The actual disease shows in the silvered foliage, in partially developed fruits, in a reduction of healthy growth, and, finally, in the death of individual branches and the whole tree.

It is possible that injury and results of injuries may contribute directly to the disease, and external injury certainly would aid the disease to enter the tree, if the complaint is due to fungous or other organisms.

All trees should be very carefully planted, and care should be taken to prevent injuring them, and especially the main stems, at any time after planting.

Heavy land should be well drained before planting stone fruits, and a sufficiency of lime rubble or chalk incorporated with the soil.

A trial should be made wherever possible as to the possible immunity of trees on their own roots by planting seedling Plums and Cherries in soil and positions from which trees affected with Silver-leaf have been removed. *P. S. Hayward*

In a recently-issued leaflet the Food Production Department draws attention to the increasing seriousness of Silver-leaf disease in fruit trees. In some localities it has become almost a scourge, and some of the most valuable varieties of Plums, especially Victoria, are threatened with extinction unless drastic measures are taken to check its extension. The disease occurs also in Apples, but less frequently.

In view of the urgent need of combating Silver-leaf, the Food Production Department strongly urges fruit growers throughout the country, especially in the important Plum growing districts, to take energetic measures to destroy all trees which have begun to die back, and to cut out the silvered branches of trees otherwise healthy. It is worth some sacrifice to take this in hand at once, for the fungus fructifies chiefly in autumn, and the longer dead wood bearing the fungus is allowed to remain the greater is the risk of infection. If this work cannot be completed before the leaves fall, all silvered branches and trees which are dying back should be conspicuously marked at once, so that they may be removed so soon as opportunity permits.

In carrying out these operations the following points must be borne in mind :—

(1) The invisible threads of the fungus are often to be found in the tissues of the wood considerably further down the branch than the level at which the silvered leaves appear. Affected branches should be cut back to a point where no brown stain in the wood can be found.

(2) All wounds made by severing branches should be pared over and covered with Stockholm tar.

(3) Dead or dying trees should be completely grubbed up. Exposed stumps on which the fungus can fructify should not be left in the ground.

(4) Severed branches and trees that have been grubbed up should be removed from the plantation immediately, and used for firewood. Small branches should be burnt on the spot. If it is necessary to keep the firewood for any time, it should be stored as far away as possible from fruit trees, and preferably in a shed. To cut down dead trees without subsequently removing them, is utterly useless; and to keep a wood-pile in or near a fruit garden is a practice that cannot be too strongly condemned.

Photograph by H. G. Kent.

FIG. 57.—VEGETABLE MARROW WITH FOUR FINE FRUITS.
(See p. 145.)

The Week's Work.

THE KITCHEN GARDEN.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

Late Potatos.—The time has arrived when frosts may be expected, and all Potatos should be dug up and harvested. Lift the tubers early in the day to allow them to become dry before gathering them for storing. Seed tubers for planting next season should be carefully selected and stored in a cool, dry place secure from frosts. Reject all diseased tubers, making a careful examination for the purpose, and keep the good ones stored in as dark a place as possible to preserve their flavour, but not so dry as to cause shrinking. This is best achieved by placing them in small heaps in a dry situation and covering them with straw and earth. Arrange them in a ridge about 3½ feet high on a good covering of straw; draw the straw straight over the tubers and cover the whole with soil to the depth of 9 inches. Make the sides of the clamp firm with the back of a spade. A handful of straw may be left protruding at intervals of 4 feet along the top of the ridge to permit of ventilation. Do not open the heap in frosty weather.

Onions.—The recent wet weather has delayed the harvesting of Onions. Any bulbs still out-of-doors should be removed at once to a cold house or open shed where they may be kept dry, and stored later in a proper manner as recommended in the calendar for September 6. Run the hoe through the rows of Onions sown last month to encourage growth before winter sets in, and give frequent dustings of soot and lime.

Winter Spinach.—It is not too late to transplant and make good any gaps in the rows of Winter Spinach. The seedlings should be carefully lifted out of the ground and dibbled in where required, taking care to make the soil firm about the roots. Thin out plants that are crowded, leaving them 6 to 9 inches apart according to the variety and the earliness of sowing; dust the plants lightly with soot as a deterrent to slugs.

General Remarks.—Early Giant and Autumn Giant Cauliflowers need constant attention to prevent waste at this season. Those that are ready for use may be pulled up and hung head downward in a cool shed, or the curds may be protected by bending some of the larger leaves over them. French Beans should be kept closely gathered until frost appears; the pods will keep in good condition for some time if gathered dry. Turnips which have completed their growth should be lifted and stored. Gather all decaying leaves from green crops and use the hoe amongst all late-growing crops while the weather is favourable. Make small sowings every week or ten days of Mustard and Cress. Complete the planting of Spring Cabbages and make good all blanks in the rows. Dust the plants freely with soot and lime until they are well established; this precaution is very necessary where slugs are troublesome.

PLANTS UNDER GLASS.

By E. HARRISS, Gardener to Lady WANTAGE, Lockinge Park, Berkshire.

Climbing Plants.—Plants growing close to the roofs of the conservatory or greenhouse need a thorough overhauling at this time of year. Bougainvilleas may be cut hard back after flowering. Such plants as Cobaea, Passiflora, and Tacsonia may be very severely thinned, thus admitting more light to plants growing beneath them. After this work is finished the glass should be washed both inside and out, and all temporary shading removed.

Watering and Syringing.—The work of affording water to plants growing in glasshouses must be done with much greater care and consideration as the winter advances. I have already mentioned in recent calendars that with the enforced lowering of all temperatures in plant houses during the coming winter, there must be a corresponding reduction of atmospheric moisture. During times of dull, cold

weather keep the houses comparatively dry, and the roots of plants on the dry side. Ventilating the houses must receive careful attention. Whenever the weather conditions permit, admit air freely, for it is only in this way that the atmosphere can be kept dry.

Begonia Gloire de Lorraine.—Plants of this Begonia should be grown in a light, airy house as near to the roof-glass as practicable. It is a mistaken notion that this plant requires much warmth to grow it successfully, for an excess of fire-heat causes weak stems, resulting in a straggling habit of growth. A temperature of 45° or 50° is suitable, and if the house is ventilated judiciously good flowering specimens may be had by this treatment. Some of the plants may now be allowed to develop their flowers, leaving the rest to flower later. Water the roots with extra care, and use stimulants more liberally than hitherto. Keep the atmosphere dry, and especially in the afternoons.

Humea elegans.—For the next few months Humeas need very careful treatment, or many of the plants will die. Do not afford water to the roots until they are absolutely in need of moisture, then water them thoroughly. Grow the plants in a cool pit and place them near the roof-glass. Any repotting necessary may be done now. Use a mixture of loam, leaf mould, coarse sand and crushed brick rubble. Plants in [illegible] pots may be shifted into 6-inch pots.

Canna.—Give less water to the roots of Cannas than hitherto to cause the foliage to fade. The plants may then be placed in their winter quarters, such as a cool, frost-proof shed. They should not be placed near to the hot-water pipes or the roots will shrivel.

Eucharis.—The forcing of Eucharis should be deferred until the turn of the year, as the plants require much fire-heat to bring them into flower. They may be wintered in a temperature of about 45°. Water the roots sparingly and keep the atmosphere dry. If the plants are infested with mealy bug sponge the leaves with an insecticide.

THE ORCHID HOUSES.

By J. Collier, Gardener to Sir Jeremiah Colman, Bart., Gatton Park, Reigate.

Temperatures.—Sudden falls in the outside temperatures may be expected, and the fires should be kept clean and ready for use at short notice in emergency, but care must be taken not to let the pipes get excessively hot, which is most harmful to the plants, while insect pests will increase rapidly in hot, dry conditions. It is advisable in every department to err a trifle on the warm side with the night temperatures, as a sudden fall of several degrees, especially if the atmosphere is unduly moist, may prove very harmful to tender exotics. The following table of temperatures should be adhered to as nearly as possible for the present: East Indian or warmest house, night, about 70°; Cattleya house, about 65°, and the Mexican house a few degrees lower. For Odontoglossum house about 55° to 57° at night, and about 52° to 54° in the morning. When banking up the fires at night manipulate the dampers so that there may be a slight fall in the temperature in each division by the early morning.

Laelia.—Laelia pumila and its many varieties which have been growing in a cool house during the summer will now be benefited by removal to a house having an intermediate temperature. Suspend the plants from the roof rafters, where the extra amount of sunlight will assist the flowers to open, and favour the development of the new growth. The roots should be well supplied with water until the new pseudo-bulbs are completed, after which less water should be given, but care must be taken that the roots are never allowed to become quite dry. The plants are frequently attacked by white scale insects, which should be diligently sought for, as the pest multiplies rapidly. Plants of Laelia harpophylla starting into growth should be placed in the intermediate house. Water should be given with moderation until the new shoots are well advanced, when the plants may be plentifully supplied with moisture. On the completion of the growths less water should be given, or the new pseudo-bulbs may become black, and decay. The dwarf-growing Laelia monophylla is at rest and should be afforded just enough water at the roots to prevent the pseudo-bulbs from shrivelling. Grow the plants in a cool, shady position in the intermediate house. Laelia anceps, L. albida, L. autumnalis and L. Marriottiana are sending up flower spikes, and will need plenty of moisture at the roots.

Lycaste.—Plants of Lycaste Skinneri and its variety alba, L. Mary Gratrix, L. Ballae and L. leucantha, will soon be finishing their young growths and forming a quantity of fresh roots. They will require a liberal amount of water until the new pseudo-bulbs are fully developed; it is important that the compost should at all times [illegible] dry between each application of water. The plants will thrive in an airy position in the coolest part of the Odontoglossum house.

FRUITS UNDER GLASS.

By W. J. Guise, Gardener to Mrs. Dempster, [illegible], Newcastle, Staffordshire.

Figs.—Early Fig trees should by now be [illegible] crop of fruit, unless the [illegible], but in such cases it is scarcely advisable to employ fire-heat [illegible]

Successional Fig Trees.—Houses in which the second crop of fruit is still ripening should be kept moderately dry and airy. Employ only sufficient fire-heat to dry up superfluous moisture [illegible] for at this period the best [illegible] and ventilated [illegible]. Trees in later houses from [illegible] be expected should receive every encouragement to ripen [illegible]. If red spider is [illegible] syringe the trees occasionally [illegible] with clear water. [illegible] inside borders should be very carefully watered, erring on the dry side rather than over-watering.

The Cherry House.—Any lifting, root pruning, or replanting of established Cherry trees should no longer be delayed. The roots are still active, and will soon grow into the fresh compost. Cherries succeed under similar treatment to that recommended for Plums in a previous Calendar. Except at the time of flowering and setting of the fruit, when gentle fire-heat is necessary to dispel stagnant moisture, good crops can be obtained without the aid of artificial warmth; this fact alone, where cool houses are available, makes Cherries worthy of extended cultivation, either trained on trellises or walls, as cordons, or cultivated in pots or tubs. If the trees are grown in pots or tubs they can be removed from the house directly the fruit is gathered, and the house employed for other purposes.

THE HARDY FRUIT GARDEN.

By Jas. Hudson, Head Gardener at Gunnersbury House, Acton, W.

Notes on Apples: Varieties.—It is now possible to give a correct estimate of the Apple crop. Our best variety this season, both for cropping and quality, is Lane's Prince Albert; moreover, the fruits are a better average in size than those of any other sort. This fine culinary Apple may be strongly recommended for a general supply after Christmas. The next in order of merit is Bismarck, which for the past twenty years has never failed to crop here. I note, however, that there are several small fruits of this variety. The third in point of merit is Lord Grosvenor. Of dessert varieties the best crop is Cox's Orange Pippin, followed by Mabbott's Pearmain; the crops of other sorts are poor. All Apples are now gathered and stored, but for some weeks to come a close watch needs to be kept in the store-room so that any fruits not likely to keep well may be used first.

Bush Fruits: Lifting and Transplanting.—White Currants, Red Currants and Gooseberries should be entirely lifted and transplanted more frequently than some growers deem advisable. I have moved old bushes of Red Currants, replanting them in another garden, with good results, and have scarcely lost a tree in the process. These bush fruits are often allowed to remain in the same plot longer than is desirable. The ground, in consequence, becomes exhausted, and needs a thorough trenching and manuring with farmyard or stable manure. It is best to prune the bushes where they now stand, before removal. When they are replanted it will be well to run strands of black cotton amongst the branches as a safeguard against small birds, which attack the buds. Black Currants may also be transplanted, but I consider it is better to renew the stock with young, nursery-grown specimens. The same remarks apply to summer-fruiting Raspberries. For these plants prepare a fresh plot of ground, trenching it deeply and working in manure. Make the ground firm by light treading and plant the stools forthwith. If this be done early in the autumn there will not be much fear of a shortage of fruit. Do the work quickly and thus prevent the fine, fibrous roots from perishing. Water the plants and prune them fairly hard, after having removed rather more shoots than usual. It is too soon to think of transplanting autumn-fruiting Raspberries. I prefer to transplant these in the spring, when the weather is genial and open. The ground should, however, be prepared for them.

THE FLOWER GARDEN.

By R. P. Brotherston, Gardener to the Earl of Haddington, Tyninghame, East Lothian.

Lawns.—The final mowing should be given to lawns. All odd patches which escape the mower should be cut with scythes or shears. If the fall of leaves has been only slight a good horse machine will easily gather them, otherwise they must be swept up before putting it over the grass. Bowling greens, banks and grass paths should also be mown at once, and unless the grass be very rough the mowings need not be lifted until a fall of leaves calls for attention, when both may be removed altogether. It may be advisable to roll young grass of the present year's sowing subsequent to its being mowed, as a protection from the effects of frost.

Storing Tender Plants.—Begonias should be lifted as soon as frost has killed the leaves, placed in a glass-house to dry somewhat, when, the growths being broken off, they should be stored in boxes for the winter in a frost-proof building. Ageratums should be stood closely together in a cold pit, and will need no further attention until the spring. Echeverias may be placed one above another against the inside wall of a cool glasshouse with a little soil placed among the roots. The variegated Anthemis will keep well stored under the pipes in late vineries. No water should be given any of these plants. It is a question if it be worth while to preserve the roots of Verbena venosa, which is easy to raise from seed in spring. The beds, once material is cleared off, should be forked or trenched at once, and re-furnished with spring-flowering plants.

Herbaceous Borders.—As soon as cold weather has destroyed the bloom there need be no delay in clearing off the annual growth of all plants that "die down." A knife is a sorry implement for this work, and I always arm workers with a reaping hook or a pair of hedge-shears, either of which enables the work to be easily performed; the border should be forked, and if time permits, any gross-growing plant reduced in size. Rotted manure and surface material from vine and other borders may be spread over the surface as equally as possible, to be hoed or lightly forked below the surface of the border.

EDITORIAL NOTICE.

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

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

Special Notice to Correspondents.—*The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.*

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

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

Letters for Publication, *as well as specimens of plants for naming, should be addressed to the* **EDITORS, 41, Wellington Street, Covent Garden, London.** *Communications should be* WRITTEN ON ONE SIDE ONLY OF THE PAPER, *sent as early in the week as possible, and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.*

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY, OCTOBER 14—
United Hort. B. & P. Soc. Com. meet

TUESDAY, OCTOBER 15—
Brighton, Hove, and Sussex Hort. and Food Production Soc. Fruit and Vegetable Exhibition at Royal Aquarium, Brighton (four days). Croydon Hort. Mut. Imp. Soc. meet. Southampton Roy. Hort. Soc. Autumn (Food Production) Show (two days).

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 49.7°.

ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, *Wednesday*, October 9, 10 a.m.: Bar. 30.1, temp. 51, Weather Raining.

Studies in Cereal-Breeding.

The paramount importance of increasing the yield of our cereal crops at the present time adds to the intrinsic interest of the following account of recent research in the breeding of cereals contributed by Prof. Punnett, whose own researches in the breeding of plants and animals have contributed so signally to the advancement of our knowledge of this subject:—Careful work on the breeding of the standard cereals is always worthy of the attention of the scientific agriculturist. However trivial the characters investigated may appear at first sight, they are almost certain to have some bearing upon problems of high economic importance. The more we know about the genetics of every character of these invaluable plants, the better is our position for getting out of them the best that they can give.

The results of some breeding experiments with Oats and Wheat, conducted by Mr. A. St. C. Caporn during the past few years on the University Farm at Cambridge, are published in the last number of the *Journal of Genetics*.* In one paper he gives an account of the results of crosses made between certain varieties of Oats with tight paleae, such as Thousand Dollar, and Avena nuda, with loose membranous paleae. Oats with tight paleae never have more than four grains to the spikelet, while Avena nuda gives up to as many as 10. But Avena nuda, with its membranous paleae, has the disadvantage of easily shedding its grain on ripening. An Oat combining the many-grained spikelet and the tight paleae would be of pre-eminent agricultural value. Occasionally seedsmen have put on the market a variety extracted from a cross with Avena nuda in which it was claimed that the rather higher yield was due to this combination. Mr. Caporn's work, however, does not support this contention. His careful analysis shows that there is some incompatibility between tight paleae and the many-grained spikelet, and he is inclined to conclude that when membranous paleae are replaced by thick, stiff husks, the extra growth which would have produced the additional grains is used up instead in the process of strengthening the paleae.

A point of considerable scientific interest also emerges from these experiments. The panicles of first-cross plants show a remarkable range of variation in the types of spikelet carried. In addition to various intermediate forms, both the pure tight and the pure loose forms of paleae occur. Pure tights predominate on the lower central part of the panicle, but as one passes upwards, and also outwards, these tend to be replaced more and more by intermediate, and finally by the pure loose forms. Nevertheless, there appears to be no difference in the nature of the generation raised from the various types of grain which occur on these mixed panicles.

A second paper gives an account of an experiment to determine the heredity of early and late ripening in Oats. Of the two varieties chosen for crossing, Mesdag and Hopetown, the former ripens about three weeks earlier than the latter. In either case the ripening period is spread over about a fortnight, but there is no overlapping. Between the latest Mesdag and the earliest Hopetown there is a period of more than a week. First-cross plants proved to be intermediate in time of ripening between the parents. Owing to unavoidable circumstances the F_2 generation was not studied with care, though it was clear that very considerable differences occurred. But a careful study was made of the F_3 generation, which was raised from 106 F_2 plants. The results showed definite segregation. Two of the F_3 families were as early as Mesdag, and Mr. Caporn concludes that the results can be interpreted on the assumption that three definite Mendelian factors are concerned with the time of ripening in this cross. With regard to the possible improvement of early varieties, he offers some interesting suggestions, which may be reproduced here. "There can be little doubt that the extent of the tillering has much to do with the rate of ripening. The tillering power of late forms is always good; that of early, very poor. Owing to the concentration of growth among early plants into one or two panicles only, these are generally bigger and bear better grain than those of late plants; but this advantage does not compensate for the diminished yield due to the small number of heads. There is thus an inevitable sacrifice of crop when it is attempted to render a late kind early. The only hope, apparently, lies in increasing the output, per individual panicle, of an already early variety. This can best be done by extracting it again from a fair-sized F_2 generation of a cross with a type which, quite apart from any ability to tiller profusely, has above all larger panicles and larger grain of better quality."

Mr. Caporn's third paper deals with the results derived from a cross made between Polish Wheat (Triticum polonicum) and an Abyssinian variety (T. etobonii). The latter differs in many respects from T. polonicum, but the study is confined to the inheritance of glume length and of grain colour. In T. polonicum the glume is long and the grain uncoloured; in the Abyssinian variety the glumes are short and the grain is purple. The inheritance of glume length brought out an interesting feature. On first-cross plants the length is intermediate. F_2 plants show a range of variation. In some the glume length is definitely long and in others as definitely short, but in most it is more or less intermediate. Further analysis made by growing an F_3 from 183 F_2 plants brought out a definite 1:2:1 ratio of longs, intermediates, and shorts. One-quarter bred true to long glumes and one-quarter to short glumes, the remainder giving a mixture. But of the longs none was as long as T. polonicum, and of the shorts none was as short as T. etobonii. As the author remarks: "Along with the ordinary segregation there is established in the F_2 generation a kind of telescopic effect, whereby the means of the two homozygote curves are brought nearer to that of the heterozygotes than the means of the parents would actually be. This condensation persists right through into the F_3 generation, in which, owing to the possibility of isolating the 'pure long' and 'pure short' curves, it can be the more readily observed. There is thus every indication that this slight change in regard to the average glume length of extracted pure types as compared with the parents is a permanent one."

The results recorded for grain colour are complex. In addition to coloured and non-coloured grains, there also occur particoloured grains with streaks of pigment. Any one of these three classes may be got to breed true. Only a small proportion of the coloured and streaky plants do so, the majority giving either two of the three kinds, or all three of them in various proportions. In his treatment of the data the author brings out a semblance of orderliness, but he admits that they are not sufficiently full to justify the framing of a scheme of inheritance for them. Nevertheless, it is an interesting addition to that growing group of cases of variegation, of which the heredity appears to offer special problems of its own. The demonstration of this peculiar type of heredity in a plant of such high economic importance as Wheat will serve to enhance the value of studies in other plants where similar phenomena occur.

* *Journal of Genetics*, Vol. VII., Pt. 4, Aug., 1918.

Itea ilicifolia.—As a garden plant Itea ilicifolia must be classed with the Chinese curiosities, of which a considerable number have revealed themselves among the hosts of plants introduced from the Far East in recent years. It is inferior to the American I. virginica, because its flowers are greenish white, not white, neither are they fragrant, and superior in the length of its tail-like racemes, which sometimes are 1 foot long. The Holly-like leaves of the Chinese plant may also be considered a recommendation, seeing that the genus belongs to the Saxifraga order. The illustration at fig. 58 shows a plant in flower against the south wall of a warm greenhouse at Kew, for it is not hardy there, though it may prove to be hardy in warmer districts. The plant was discovered in Hubeng by Dr. HENRY, and first flowered in this country in Lord KESTEVEN'S garden at Casewick in 1885.

Women's Farm and Garden Union.—This admirable institution was established six years ago by Miss ALICE CAZALET, and has been doing splendid work during the present year. Its object is to train women who are bona fide workers and whose acceptability is vouched for by reliable sponsors.

Conference of Horticultural Lecturers at Wisley. A second conference of lecturers on allotment gardening, under the auspices of the Royal Horticultural Society's Food Production Scheme, was held at the Society's Gardens, Wisley, from September 25 to October 2 last. The leaders of the conference were Mr. F. J. CHITTENDEN, head of the R.H.S. Laboratory and School of Horticulture; Mr. J. C. NEWSHAM, principal of the Monmouthshire Farm School, Usk; and Mr. A. G. BRIGGS, Instructor in Horticulture to the Surrey County Council. The following attended the conference:—Mr. F. JENNINGS, Chatsworth Gardens; Mr. R. W. GREEN, Strathmore, Elm, Walsall; Mr. H. BIRD, Battenburg Avenue, Leicester; Mr. A. D. GROUND, Ilchester, Welshpool; Mr. J. G. BLAKEY, The Gardens, Hollywood, Redditch; Mr. H. PATIENCE, Waddeler Lane, Cheltenham; Mr. H. ASHFORD, The Gardens, Aberdeen, near Abergavenny; Mr. A. GIBSON, Hedrington Hill Hall Gardens, Oxford; Mr. A. C. BARTLETT, The Orchard, Hampton Hill; Mr. H. COWLEY, 7 The Gardens, 29, Haystock Street, W.C. 2; Mr. J. B. STEVENSON, China Garden Cottage, Bournemouth; Mr. G. WHITTINGHAM, The Gardens, South Down Hall, Polegate; and Mr. H. STADMAN, The Nurseries, Crawley. The object of the conference was to ensure uniformity of advice on the various gardening operations.

Nova Scotia Apple Crop. Estimates place the yield of the Nova Scotia Apple crop at from 400,000 to 500,000 barrels. That conditions on the whole have been rather unfavourable is shown by the fact that an average year disappointingly matures 500,000 to 1,000,000 barrels. Last year the crop amounted to 650,000. This in 1911 1,400,000 barrels were produced by the orchards of Nova Scotia. Although the yield as estimated is below normal, Nova Scotia fruit growers must find a market outside of the province for 300,000 barrels.

War Items.—Pte. C. W. C. YOUNG, eldest son of Mr. W. H. YOUNG, formerly of Care Lawn Gardens, East Sheen, and now in charge of the Orchids at Warren House, Stanmore, after passing safely through the many dangers of two years and nine months' campaign in France, was, we regret to learn, killed in action on the 2nd inst. He joined the Civil Service Rifles, 1/15 London, in May, 1915, when he was just seventeen, and thus has added his name to the roll of honour ere he reached his 21st birthday. Before joining the Army he was a member of the staff of the Great Eastern Railway at Bishopsgate.

With deep regret we learn that Mr. ARCHIBALD COKE, late of Biel Gardens, East Lothian, and formerly foreman gardener at Roby Hall, Tarbolton, was killed in action on July 20, after two years and nine months' service in France.

[Photograph by E. J. Wallis.

FIG. 58.—ITEA ILICIFOLIA: FLOWERS GREENISH WHITE.

cially for women war workers on the land in conjunction with the Women's National Land Service Corps. It is affiliated to the National Union of Women Workers, the Herb Growers' Association, and other bodies interested in the welfare of women. The president is Princess LOUISE, Duchess of Argyll and members of the council include Lady FALMOUTH, Lady NORTHCOTE, the Countess of SELBORNE, Miss WILLCOCKS, and other influential persons, while Mr. PROTHERO, Professor BIFFEN, Professor BOTHAMLEY and Professor WOODHEAD are members of the Advisory Committee. The office is at 50, Upper Baker Street, and the secretary, Mrs. MILES BENSON, is most energetic and disinterested in affording assistance and advice to women desirous to work at farming or gardening and to employers in want of expert assistance. A Monthly Leaflet is issued containing useful information. An excellent club for women has been started, membership being limited to those who are bona fide workers and whose acceptability is vouched for by reliable sponsors.

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Jam Rationing. Jam, marmalade, syrup, treacle and honey are to be rationed from November 3. Purchases of jam and marmalade can be made only from the retailer with whom the consumer is registered. Syrup, treacle, and honey may be bought with coupons from any retailer able to supply them. Persons who will be between the ages of six and eighteen at midnight on December 31 can obtain a supplementary ration of jam. They will receive a book containing an extra leaf of red coupons with a jam counterfoil, which must be registered. In addition to providing for the licensing of wholesale dealers in jam or syrup, the Jam and Syrup (Registration of Dealers) Order also makes obligatory the registration of retailers of jam or syrup. Applications for registration by such retailers should be made not later than October 15 to the Food Control Committee of the district in which the retailers' premises are situated.

HOME CORRESPONDENCE.

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

Apple Small's Admirable.—As a kitchen Apple I regard Small's Admirable as one of the very best sorts, though, for some unexplained reason, it is very little grown. It is one of the most reliable varieties, in fact our trees have never failed to crop fully for the past 30 years, and this season, when Apples are generally scarce, it has proved to be our best. On October 2 we picked 16 bushels from one tree. In appearance the fruit much resembles Tower of Glamnis, and about equals it in quality. In growth it is quite distinct, having a much more pendulous habit, and, indeed, it is one of the most attractive Apple trees I know. *E. Beckett, Aldenham House Gardens, Elstree.*

Perpetual-Flowering Carnations in Unheated Greenhouses (see p. 127).—The majority of Carnation growers will agree with *A. H.* that artificial heat is not necessary to protect these plants from frosts during the winter, just as the great consensus of opinion would disagree with the statement that "no plant will produce such generous supplies of bloom during the entire twelve months of the year as the Perpetual Carnation when grown without artificial heat." None more than the great Carnation specialists of England and America—the men who cover countless acres with glass for the cultivation of the Carnation alone—would welcome and adopt such a course were it practical and sound, since it is "generous supplies of bloom during the entire twelve months of the year" that they are out for, and since also the saving in fuel, labour and appliances would be very great. Artificial heat for the Perpetual-flowering Carnation in winter-time is not necessary in order to counteract cold alone, least of all dry, frosty cold, though it is essential and absolutely necessary in the case of flowering plants in order to assist the development of the blooms, in conjunction with a free circulation of air to dispel damp, which is the greatest enemy to be overcome in low-lying districts, and the precursor of much disease. Without artificial heat the flowers would but damp and rot upon the plants. Chief of the drawbacks to the successful flowering of the Carnation in England in winter are damp, fog, and absence of sunshine, and while the cultivator is helpless in the case of the two last-named, he can, at least to some extent, lessen the evils arising from the first by a discreet use of fire heat as experience dictates. *E. H. Jenkins.*

SOCIETIES.

ROYAL HORTICULTURAL.

OCTOBER 8.—The London Scottish Drill Hall, Westminster, was well filled with exhibits of fruit on Tuesday last, and a large number of Fellows and visitors attended the meeting. The Floral Committee did not meet on this date, nor did the Orchid Committee meet, as the whole meeting was given over to displays of British-grown fruit. The Joint Committee of the R.H.S. and National Dahlia Society met early in the morning to consider new Dahlias submitted for awards.

The Fruit Show was a great success, and the quality of the fruit staged was amazingly fine, while the quantity was far greater than the most optimistic visitor anticipated.

Fruit and Vegetable Committee.

Present: Messrs. A. H. Pearson (in the chair), J. Cheal, W. Poupart, John Harrison, W. Pope, E. W. Roach, W. Bates, Edwin Beckett, G. Reynolds, A. R. Allan, W. Crump, H. Hooper, H. Markham, N. F. Barnes, Thos. Coomber, A. Bullock, F. Jordan, Jas. Gibson, J. G. Weston, E. A. Bunyard, W. H. Divers, John Basham, P. C. M. Veitch, Geo. P. Berry, H. S. Rivers and P. D. Tuckett.

A few seedling Apples were forthcoming, but no award was made. One named Cutler Grieve, raised by Mr. Jas. Grieve, and shown by Messrs. G. Bunyard and Co., the Committee desired to see again. Well-cropped Production Runner Beans, shown by Mr. J. Cook, Camberley, attracted some attention; large clusters of fleshy pods were borne on plants raised from seeds sown about the middle of June.

Competitive Fruit Classes.

The competition in the various classes for fruits was fairly good throughout, and especially in those for Grapes.

Apples were wonderfully fine in size and colour, and the comparatively few Pears staged were of excellent size and quality.

Collections of Dessert Fruits.

Nine Dishes of Ripe Dessert Fruit.—There were three exhibitors, and all staged very creditable collections. The 1st prize was won by C. A. Cain, Esq. (gr. Mr. J. Pateman), The Node, Welwyn, for a splendid collection in which every kind reached a high stage of perfection. Muscat of Alexandria and Madresfield Court Grapes, Superlative Melon, Sea Eagle and Late Admirable Peaches, Durondeau and Doyenné du Comice Pears, and Cox's Orange and Ribston Pippin Apples were all shown well; 2nd, The Duke of Newcastle (gr. Mr. G. Barker), Clumber, Worksop, whose outstanding dishes were of Muscat Hamburgh Grapes, Princess of Wales and Golden Eagle Peaches and Pitmaston Pine Apple; 3rd, Mr. James Lock, Oatlands Lodge Gardens, Weybridge.

Six Dishes of Ripe Dessert Fruit.—Lord Hillingdon (gr. Mr. J. Skelton), Sevenoaks, won the 1st prize with fruits of tempting appearance. The principal dishes were of Muscat of Alexandria Grapes, Lady Palmerston Peach, and Cox's Orange Pippin Apple; 2nd, the Duke of Wellington (gr. Mr. E. Matthews, Strathfieldsaye, who had excellent bunches of Mrs. Pearson Grapes; 3rd, G. Miller, Esq. (gr. Mr. J. Keddie), Academics, Bushey, Herts.

Grapes.

The Grapes in all the classes were especially good. Although the bunches were not of sensational size they were beyond the average of good types in shape, and sufficiently furnished with large, well-coloured berries. The varieties Black Hamburgh and Muscat of Alexandria were exceptionally well finished. There were 6 exhibits of 3 varieties, 2 bunches of each, and G. Miller, Esq., excelled easily. His varieties included magnificent bunches of Alnwick Seedling, Appley Towers, and Madresfield Court (black), and Lady Hutt and Muscat of Alexandria (white); 2nd, the Duke of Newcastle, who showed splendid Gros Colmar and Chasselas Napoleon; 3rd, C. A. Cain, Esq.

Four Varieties, 2 bunches of each.—Lord Hillingdon, who included almost perfect Muscat's and Mrs. Pearson, was the only exhibitor and was awarded the 1st prize. He also won the 1st prize for 2 bunches of Black Hamburgh, with magnificent examples.

Lord Hillingdon was also 1st for Mrs. Pince variety, and 2nd with Madresfield Court, and in the class for any other black Grape. The Duke of Newcastle won 1st prizes for Madresfield Court, with Muscat Hamburgh for any other black Grape, for any other white Grape with Mrs. Pearson, and was 2nd in the strong Muscat of Alexandria class, and for Mrs. Pince.

Mrs. W. Rudall (gr. Mr. H. H. Brown), Castle Hill, Englefield Green, was 1st for Black Alicante; 2nd, the Duke of Wellington, W. H. Nockolds, Esq. (gr. Mr. F. W. Herbert), Nutfield Court, Redhill, was 1st for Prince of Wales, and Mr. Jas. Lock excelled with exceptional bunches in the class for Muscat of Alexandria.

Collection of Hardy Fruit.

Mr. R. Steward, Painshanger Gardens, Hertford, was the only exhibitor, but he staged a very representative collection of excellent fruits, and deservedly received the 1st prize. Besides splendid Apples such as Rival, Chas. Ross, Mère de Ménage, Middle Green, and Emperor Alexander, he showed dishes of Hailshamberry, Painshanger Red Currant, Figs and Melons. Of the Pears Brockworth Park, Glou Morceau, Marguerite Marrillat and Durondeau were very fine.

Nurserymen's Classes.

Messrs. H. Cannell and Sons were 1st in the premier nurserymen's class. The arrangement was exceedingly attractive, and the exhibit was composed of high-class fruits equal in quality to any we have seen. Apples predominated, and these were of beautiful colour, good form, and useful, even size. The highest colour was seen on Worcester Pearmain, Baumann's Red Reinette, Emperor Alexander, King of the Pippins, Gascoyne's Scarlet, Calville Rouge, Précoce, Rival, Charles Ross, and Duchess's Favourite. Of less showy appearance, but none the less valuable, were Lane's Prince Albert, Lord Derby, Autumn Pearmain, Warner's King, Norfolk Beaufin, and Bramley's Seedling, though for size and general excellence none was better than the central stand of Peasgood's Nonsuch. Boxes of most brilliant Dartmouth Crab were most attractive; 2nd, Messrs. W. Seabrook and Sons, Ltd., who staged excellent King of the Pippins, Worcester Pearmain, Cox's Orange Pippin, Gascoyne's Scarlet, Bismarck, Melon, and Allington Pippin amongst their many excellent Apples, and Fertility and Beurré Clairgeau Pears.

In the smaller class for fruits staged on a 20-feet run by 6 feet tabling the competition was closer; Mr. H. Clost won the 1st prize. The Apples in his collection were particularly good—well coloured and of good, useful sizes. Perhaps the best of the dessert varieties were Worcester Pearmain, Cox's Orange Pippin, Calville Rouge, Précoce, Duchess' Favourite, and Allington Pippin, while of the kitchen sorts Peasgood's Nonsuch, Bramley's Seedling, Emperor Alexander and Newton Wonder were the best. Pears were represented by a dish of Jamieuse Pitmaston Duchess; 2nd, Messrs. H. Spooner and Sons, whose Apples were characterised by much golden sheen and fine general appearance; 3rd, Messrs. James Nash and Sons.

The 20 baskets of cooking and dessert Apples were especially finely coloured and of good appearance. The 1st prize was won by Col. J. F. Honeyball (gr. Mr. G. F. Packman), and his outstanding baskets were of Chas. Ross, Allington Pippin, Paroquet, Coronation, Mère de Ménage, Bramley's Seedling, Peasgood's Nonsuch, and Cheltenford Wonder; 2nd, Lt.-Col. H. L. Weir, Ham Green, Kent, who staged smaller, but very good examples.

Gardeners' and Amateurs' Classes.

The collections of 24 dishes of Apples, 16 of kitchen and 8 of dessert varieties, made an interesting show. J. Liddell, Esq. (gr. Mr. R. Learmouth), Sherfield Manor, Basingstoke, was 1st. He included King of Tompkins' County, Allington Pippin, Chas. Ross, and Ribston Pippin (dessert); Blenheim Pippin, Bramley's Seedling, Peasgood's Nonsuch, Lane's Prince Albert, Gloria Mundi and Mère de Ménage (cooking); 2nd, Mr. R. Steward.

C. A. Cain, Esq., won 1st prize for 6 dishes of cooking Apples Lane's Prince Albert, The Queen, and Peasgood's Nonsuch in magnificent condition, and with equally high-class Rival, Chas. Ross, Allington Pippin, and Washington, and was also 1st for 6 dishes of dessert Apples. With quite the finest Pears in the show the same exhibitor won the 1st prize for 9 dishes of dessert Pears; 2nd, John Liddell, Esq.

C. H. Berners, Esq., was 1st for Plums, with splendid Coe's Violet, and Damsons. Mr. F. G. Gerrish, Pend'ley Manor Gardens, Tring, showed the best Morello Cherries, and with splendid Queen Alexandra, Autumn Raspberries. F. E. Palmer, Esq. (gr. Mr. H. E. Wallis), Sherfield-on-Loddon, won the 1st prize for Raspberries.

County Classes.

There was a great falling off in exhibitors in these classes, which are restricted to the various groups of county districts. 1st prizes were won by Major Hennessy (gr. Mr. J. Hygate), Tubney Hall, Winchfield, for Apples in the Kent Class; John Cope, Esq., Ferndale, Teignmouth, for Apples in Class 29; Sir Ed. Pearson (gr. Mr. W. Stedman), Brickendonbury, Herts, for Apples and Pears in Class 30; Sir Montagu Turner (gr. Mr. A. Barrett), Bedfords, Romford, for Apples in Class 31; C. H. Berners, Esq. (gr. Mr. W. Messenger), Wolverstone Park, Ipswich, for Pears in Class 31; A. Wood, Esq., Woodwell House, Carnforth, for Apples in Class 34; Capt. C. L. Gordon (gr. Mr. Jas. Duff), Castle Douglas, Kirkcudbright, for Apples in Class 35, and the Earl of Bessborough (gr. Mr. T. Tomalin), Piltown, Co. Kilkenny, for Apples grown in Ireland.

SINGLE-DISH CLASSES.

Dessert Apples.—Except for the two classes for any varieties not named, which require 8 fruits, these classes called for 6 fruits to a dish. In several classes there were either no exhibits or the specimens were not considered worthy of a prize, but in the majority of instances the quality and number of exhibits were very good.

1st prizes were won by J. B. FORTESCUE, Esq., for Mr. C. Page), Dropmore, Bucks, for (a) Adams' Pearmain, (b) Egremont Russet, and (c) Cox's Orange Pippin; Sir EDWARD PEARSON, for Allington Pippin; W. H. NICHOLLS, Esq., for American Mother; the Duke of WELLINGTON, for Bismarck Pippin; the Earl of BESSBOROUGH, for (a) Lord Hindlip and (b) Wealthy; E. E. PALMER, Esq., for Charles Ross, and with Jefferson for any other variety of early Apple; in the class J. B. FORTESCUE, Esq., was 2nd with Economic Orange; Major HENNESSY, for Ribston Pippin, Rival, and W.A. King of Tompkins County for any other variety of late Apples in which class the Duke of WELLINGTON was 2nd with Court Pendu Plat; G. MALSH, Esq., Marchmont, Warrington, for Cox's Orange Pippin, and St. Edmund's Pippin; Mr. J. TUPP, Bear Wood Gardens, Wokingham, for Cox's Orange Pippin; J. COPE, Esq., for James Grieve and Margil.

Cooking Apples.—The 1st prizewinners were Sir MONTAGU TURNER, for Bismarck and Dumelow's Seedling; Major HENNESSY, for (a) Bloenheim Pippin, (b) Bramley's Seedling, (c) Mère de Ménage, (d) Peasgood's Nonsuch, (e) The Queen, and (f) Lane's Prince Albert; the Earl of BESSBOROUGH, for (a) Lord Derby, (b) Grenadier, (c) Lane's Prince Albert, and (d) any other variety; J. WARNER'S King, G. MARSH, Esq., for a Stirling Castle and (b) any other variety, with Charles Ross, in which class the Earl of BESSBOROUGH was 2nd with Loddington; R. COLLARD, Esq., Knaresley, Shotfield, for Ecklinville; Mr. J. TUPP, for Gold in Noble and Edward VII., and the Duke of WELLINGTON for Grenadier, Lane's Prince Albert, and Newton Wonder, and Sir EDWARD PEARSON for Emperor Alexander.

Dessert Pears.—H. BERNERS, Esq., for 1st prizes for (a) Beurré Rose, (b) Beurré Hardy, (c) Beurré Superfin, (d) Charles Ernest, (e) Doyenné du Comice, (f) Easter Beurré, (g) Princesse Dagmar, and (h) with Marie Benoist for any other late variety, in which class C. H. COOKE, Esq., was 2nd with Beurré Bachelier; Sir M. THOMAS, for Fondante d'Automne; C. H. COMBE, Esq., for Mr. G. A. Kemble, Cobham Park Succès, for Louise Bonne of Jersey, and the Duke of NEWCASTLE for Clapp's; J. B. FORTESCUE, Esq., for Beurré d'Anjou; H. SHIELD, Esq., Cobham Surrey, for Conference, and the Duke of WELLINGTON for Doyenné du Comice.

AFFILIATED SOCIETIES CHALLENGE CUP CLASS.

The only exhibit in this class, which required 6 dishes each of dessert Apples, cooking Apples and dessert Pears, was from the KNEBWORTH AND DISTRICT HORTICULTURAL SOCIETY, Hertfordshire, and it was awarded the Challenge Cup. The exhibit was a highly creditable one and included Dumelow's Seedling, and Bramley's Seedling amongst the Cookers, and Beurré Hardy amongst the Pears, and Pomeroy, King of the Pippins, Rival, The Queen, and Lane's Prince Albert amongst the Apples.

Dahlia Committee.

Present: Messrs. John Green (in the chair), A. Turner, E. H. Jenkins, D. B. Crane, J. A. Barrett, H. J. Jones and Chas. H. Curtis.

About three dozen new Dahlias were submitted for the jurisdiction of this joint committee and the following novelties gained the Royal Horticultural Society's Award of Merit and the National Dahlia Society's First-class Certificate:

Hebe.—A large, single, decorative variety, broad-petalled and stiff-stemmed. The colour is light mauve, with a narrow yellow zone around the golden centre.

Standard.—An attractive, large-flowered, decorative Dahlia closely approximating to the Cactus type in form. Very double, and with strong, stiff stems. Colour bright rosy mauve. These two varieties were shown by Messrs. J. STRED WICK AND SON.

Nooch Bill.—An extremely beautiful medium-sized decorative variety that for colour and freedom of flowering should find many admirers. For garden decoration it should prove very popular. The bloom has three rows of florets and is flame-coloured, shading to rose-pink at the tips of the florets, and with a golden centre.

Ino.—A full-sized Collerette variety of good shape and with a large ring of cobalt segments. The colour is yellow, with a heavy overwash of pink towards the ends of the florets. Cobalt light yellow; stems strong and stiff.

Confidence.—A charming medium-sized, Pæony-flowered variety, free-flowering and elegant. The colour is a delightful shade of pink flushed over blush, and with a little yellow shading passing into the base of the florets from the yellow centre.

Queen.—A very large semi-double Pæony flowered Dahlia with florets nearly 2 inches broad. The colour is rich scarlet with a suspicion of orange underlying the scarlet-golden centre.

Flower.—Another giant decorative Dahlia brought by Souvenir de G. Dragon group, and measuring 10 inches in diameter. The blooms are double, shapely, and borne on good stems. The colour is intense dark maroon with a bluish centre. The foregoing five varieties were exhibited by Messrs. BARRELL AND CO.

Vesuvio.—A distinct decorative Dahlia of fairly large size. The florets have interlocking petals giving them a somewhat flatted appearance so that the build of the flower is unusual. The colour is light rose-pink. Shown by Mr. J. A. BARRELL, Anerley.

Lord.—One of the Star Dahlias. Very free flowering, with neat, bright pink, yellow-centred flowers, borne on stiff, dark stems. A very showy variety. Shown by Mr. CHAS. TURNER.

SCOTTISH HORTICULTURAL.

OCTOBER 1.—The monthly meeting of this Association was held at 5, St. Andrew Square, Edinburgh, on this date, Mr. Robert Fife, president, in the chair.

A lecture was delivered by Mr. J. S. Cuthbertson on bee-keeping in bee-culture at the Edinburgh and East of Scotland College of Agriculture, on "The Year and its Critical Periods." Mr. Cuthbertson stated that the increasing attention which had been devoted to bee-keeping in this country was due to the fact that it was a hobby that could be carried on at home at very little cost, and to the possible extension of bee-keeping as a profitable industry. The enormous quantity of fruit imported showed very clearly the great possibilities of production. Fruit could be grown with more readily available land if it could be proved to be suitable for bees, and increased transport facilities might in many cases be profitably provided at home. The questions of availability of food and transport for bees were being overdone and ought to be considered in view of the war conditions of reconstruction.

There was no doubt that the Arran could be successfully and profitably grown in Scotland when attention was paid to the best breeds, pedigree stock and longevity, it required an elevated situation, a rich loam, a plentiful rainfall, good drainage, and abundant sunlight. But although these might be considered to be ideal conditions they were by no means indispensable, and, under proper treatment, the Apple grew and fruited well under widely different environments. As regards stocks, Mr. Chisholm strongly recommended the planting of bush trees grafted on the broad-leaved Paradise, on account of their coming earlier into bearing, their greater productiveness, and their being better under control for carrying out the various cultural operations. He pointed out that, whether the planting was done in autumn or spring, plants should be ordered early, and that they should be lifted from the nursery lines in autumn and "heeled" into a trench till they were required. The principle was laid down that pruning and manuring should go hand in hand, instead of the all too prevalent practice of pruning ostensibly for the production of fruit and at the same time applying manures in such ill-balanced proportions as to produce annually a great amount of useless wood. He deprecated the large number of varieties on the market, and he maintained that the inferior sorts should be ruthlessly weeded out. In selecting varieties soil was the dominating factor for or against success of any particular one, but many sorts succeeded well on any reasonably good soil, whether light or heavy. For this purpose the following selection was given:—Dessert: Beauty of Bath, Gladstone, James Grieve, Worcester Pearmain, Irish Peach, Allington Pippin; Culinary: Golden Spire, Lord Grosvenor, Early Victoria, Bismarck, Lane's Prince Albert, Bramley's Seedling.

The exhibits were: Collection of Apples from Mr. CHISHOLM (silver medal); collection of Apples from Messrs. STORRIE AND STORRIE, Glenalmond (silver medal); collection of Apples and Pears from J. W. COWAN, Esq., Dalhousie Castle (bronze); Mr. W. CRIGHTON (silver medal); collection of Apples, Pears, etc., from Mr. J. E. DAVIS, Bickwood Hall Gardens, Sheffield (silver medal); collection of vegetables from City of Edinburgh Parks Department, per Mr. McHattie (silver medal); Apple Bathe Neilson, from Mr. J. W. SCARLETT, Scunthorpe; fruits of broad-leaved Paradise Apple from Mr. W. LAMONT, Edinburgh; Decorative Dahlias from Messrs. DOBBIE AND CO., Edinburgh (Decoratives Dobbie's Bolden, Dazzler, Sparkler, Ruby Gem and Vindictive, and Collerette Hussar, were awarded First-class Certificates).

ROYAL SCOTTISH ARBORICULTURAL.

SEPTEMBER 28.—At a meeting of the Council of this Society, held at 19, Castle Street, Edinburgh, on this date, over two hundred new members were elected as a result of a special appeal sent out by the president, the Duke of Buccleuch, K.T. The following resolution was unanimously adopted by the meeting:—"The Council of the Royal Scottish Arboricultural Society welcomes the gratifying announcement made by Viscount Peel in the House of Lords on August 8 in reply to the Earl of Selborne that the report of the Forestry Sub-Committee of the Reconstruction Committee has been accepted by the Government and that a Central Authority for Forestry for the United Kingdom would be set up and the policy of planting would be pursued with the least possible delay. The Council trusts that the Government's intentions so announced will receive legislative sanction as soon as Parliament reassembles. The Council respectfully repeats to the Government the request that this Society should have an opportunity of considering and expressing its views upon schemes in contemplation for Scotland before they are actually adopted."

NATIONAL CHRYSANTHEMUM.

OCTOBER 7.—The Floral Committee of this society met at Essex Hall, Strand, W.C., at 2.30 p.m. on this date. No new variety was submitted for award and the meeting was a very brief one. Several interesting matters relative to the future work of the Committee were discussed informally, and the opinion was expressed that the Chrysanthemum known variously as Cindella and Sunchty is the best early white market sort.

TRADE NOTES.

NEW PRICES FOR ONIONS.

An Order has been issued establishing maximum prices for British eating and pickling Onions of the 1918 crop, and comes into operation on the 14th inst. Eating Onions are defined as those which will not pass through a sieve of 1-inch mesh, and pickling Onions as those which will go through the riddle. It is provided that Onions must be sold by weight, and eating Onions must not be used for making pickles. The maximum prices are as follows:

EATING ONIONS.

Time of delivery.	Growers' maximum price, f.o.r. on rail per cwt.	Sales of 1 cwt. or more, per cwt.	Retail Prices. Sales of 1 stone or more, but less than 1 cwt.	Sales of less than 1 stone per lb.
1918	s. d.	s. d.	s. d.	d.
Before and on Oct. 31	25	34 0	1 5	4½
Nov. 1 to Nov. 30 ..	29	35 0	1 6	4½
Dec. 1 to Dec. 31 ..	20	26 0	1 3	3½
1919				
Jan. 1 to Jan. 31 ..	22	28 0	1 11	5
Feb. 1 to Feb. 28 ..	34	40 0	2 2	5½
Mar. 1 to Mar. 31 ..	36	42 0	2 5	5½
April 1 and after ..	38	44 0	2 8	6½

PICKLING ONIONS.

Any time	30	36 0	1 8	4½

The Order makes it an offence to sell British Onions mixed with any other Onions, or falsely to represent or misdescribe British Onions as imported Onions, or imported Onions as British Onions. In the case of Onions not separated when sold by the growers, these, if sold for delivery before December 31, must be sold at prices applicable to eating Onions, and if sold after December 31, at prices applicable to pickling Onions. The maximum wholesale dealer's profit is 35s. per ton, and if the Onions pass through the hands of more than one wholesale dealer this profit must be shared.

Growers who carry on separate businesses as wholesale dealers may apply to the Director of Vegetable Supplies, 100, Cromwell Road, London, S.W. 7, for licences to sell their own Onions as wholesale dealers. Onions may be sold by retail only by registered retail dealers in eating Potatos, or by growers whose total Onion crop is not more than 10 cwt. Retail dealers may charge 4d. a lb., with a maximum of 2d., for delivery to customers. The Order does not apply to Shallots, Potato Onions, or to Onion sets sold for planting. All contracts are cancelled, except in respect of deliveries before October 7.

MESSRS. DOBBIE AND CO., Edinburgh, have appointed Mr. Harry Wright manager of their Marks Tey establishment. Mr Wright was Mr Ireland's chief assistant, and has been in the service of the firm for over 22 years.

CROPS AND STOCK ON THE HOME FARM.

FARM ORCHARDS.

IT is well known that the majority of farm orchards are ill attended. The trees are planted, or rather they are "stuck in," and attention ends there. This is a short-sighted policy. At Swanmore we have 6 acres of Apple trees, bushes and standards, which succeed well; the trees are profitable, interesting, and their crops of value to the community.

I should not advise the farmer with but little knowledge of fruit-growing to plant bush trees, but standards, with 3 feet stems if possible, so that the orchard may be used for grazing sheep, calves or pigs. When trees of this type are established they require less attention than bushes, and that is important to the farmer with a limited knowledge of fruit growing. Where Pear trees succeed I advise the inclusion of a few Pear trees of desirable varieties. In the case of all kinds of fruit I would limit the number of varieties to a minimum. Plums should be more extensively planted, and good varieties should be selected. Such sorts as the Michaelmas Plum, which is really a Bullace, are unprofitable, and one may surmise what Monarch Plums would realise if they were planted instead.

A farm orchard on grass may be utilised for other purposes, and if possible it should be near the homestead, as being handier for young cattle. The best site is one with a southern aspect, or a westerly one would suffice. Shelter from the east and north should be provided, not only for the trees but for the cattle.

No other kind of shelter or fence is so good as a Quick hedge. Austrian Pines, intermixed with Larch and Black Italian Poplars, would form the quickest growing screen.

Standard trees of all kinds of fruits should be not closer than 24 feet apart, and in some cases 30 feet is better. The former distance will suffice if space is not unlimited.

The following varieties are suitable:—

Apples—Culinary: Grenadier (August), Norfolk Beauty (September), Royal Jubilee (October), Bramley's Seedling (November, December and January), with Dumelow's Seedling (Wellington) to follow.

Dessert. Devonshire Quarrenden (August), Worcester Pearmain (September), James Grieve (October), Blenheim Pippin (November), Cox's Orange Pippin (December), with King of Tompkins' County and King's Acre Pippin to follow.

Pears—Williams' Bon Chrétien (September), Louise Bonne of Jersey (October), Doyenné du Comice (November), with Pitmaston Duchess for stewing.

Plums. Rivers' Early Prolific (August), Czar, Victoria, Jefferson, Washington, and Pond's Seedling (September), with Monarch for later use. If Damsons are required choose the Merryweather and Langley Bullace.

The main causes of all success with fruits are (1) improper preparation of the ground before planting, (2) neglect or a want of knowledge in pruning, (3) neglect of spraying the trees. The first of the three causes is the only one that concerns the intending planter just now. Especially for stiff soil is a thorough preparation of the ground an absolute necessity to success. A station at least 4 feet square and not less than 2 feet deep should be prepared by trenching, or, better, throwing out the whole of the soil, separating the turf, the surface soil, and the subsoil. Many persons put the turf at the bottom of the hole, whereas it is needed on the surface in which to plant the trees. The subsoil below 2 feet should be broken up another foot deep and left at the bottom. Half-decayed farmyard manure should be liberally added to the surface soil to encourage vigorous growth, the aim being to obtain a large area of branch growth in the shortest possible time, because without this a large fruit crop cannot be obtained. Many writers err in advising that animal manure should not be employed at planting time. In all cases plant the trees on the surface in newly trenched soil, covering the roots with a slight mound. With the gradual sinking of the trenched soil the trees will eventually settle down to the normal level, whereas if planted 6 inches below the natural surface the roots would eventually be much too deep, which is the main cause of canker. Directly the trees are planted they should be staked firmly to prevent the wind swaying them to and fro, as this would cause the roots to become damaged and loosened in the soil. The stakes should be not closer than 6 inches from the stems, to obviate bruising the bark. If cattle are turned into the orchard the stems should be protected. Three stakes, at least 6 feet high, should be driven into the soil 1 foot from the stems and arranged anglewise. The stakes should be surrounded with strands of barbed wire, or wire netting will suffice. *E. Molyneux.*

ANSWERS TO CORRESPONDENTS.

BROWN ROT IN APPLE TREES. *T. J. H.* If you find any dead leaves hanging on the trees through the winter, remove them, and cut out any dead shoots or spurs. These should either be burnt or dug into the ground. During the winter spray the trees with copper sulphate (98 per cent. purity), 1 lb. in 10 gallons of water, or with lime-sulphur mixed according to the maker's directions for winter spraying. In the spring, as soon as the flowers have shed their petals, spray with lime-sulphur, summer strength, and spray again a fortnight or three weeks later. You will then have done all that is possible against brown rot. Lime-sulphur may be purchased in concentrated liquid form.

BUILDING A GREENHOUSE. *T. S. C.* If a 14-inch buttress is built into the back of the 9-inch wall at every 6 feet the wall should be strengthened sufficiently. The wall-plate at the top of the wall will add support also. Well-seasoned Red Deal, with 21 oz. glass for the roof and 15 oz. glass for the front and ends, will provide a substantial house that, if kept regularly painted, will last sound for many years.

CATTLEYA FLY. *J. T.* The Cattleyas are suffering from an attack by the Cattleya Fly (Isosoma orchidearum) (see fig. 59) and also by the Orchid Cecid (Cecidomyia Cattleyae). Both these pests are frequently very injurious to Orchids, therefore the houses containing Orchids liable to attack should be fumigated at brief intervals, in order that the young flies may be killed before they are able to do any harm themselves or deposit eggs. In the case of a very bad attack of Cattleya Fly, where one or more growths have become much swollen and infested, it may be advisable to cut out and burn such growths, but otherwise the best method of exterminating the pest is the one described by Mr Thurgood in *Gard. Chron.*, Feb. 9, 1907, p. 94, i.e., fumigating the house twice a week for five months. At the end of this period all the eggs deposited have hatched, passed through the larval stage, and become perfect flies, and these latter are killed by the subsequent fumigation.

CYANIDING TOMATO HOUSES: *G. H.* On p. 141 we gave instructions for cyaniding fruit houses, and the same general instructions hold good in the case of houses containing Tomatos infested with White Fly (Aleyrodes vaporariorum). The foliage of the Tomatos should be dry when cyaniding is commenced. As the fumes are deadly poisonous, every care must be taken to keep the house locked, and as airtight as possible, during fumigation. Subsequently, open the ventilators from the outside, and the doors if weather permits. No member of the staff should be allowed to enter the house until the fumes have dispersed. For White Fly on Tomatos, the materials for each 1,000 cubic feet should be 1¼ ounce sodium cyanide, 3½ fluid ounces sulphuric acid, and 10½ fluid ounces water; temperature not above 55°; exposure 40 minutes. Repeat the fumigation at intervals of two days until all eggs are hatched and flies killed.

MOTOR TRACTOR PLOUGHS; *D. M. G., Amsterdam.* We do not know of a motor driven plough with so low a power as 1·4 horses. The Titan tractor is 20 h.p., and will, in addition to ploughing, scarifying, cultivating and rolling the land, draw two self-binder corn-cutting machines; it will manage road haulage up to

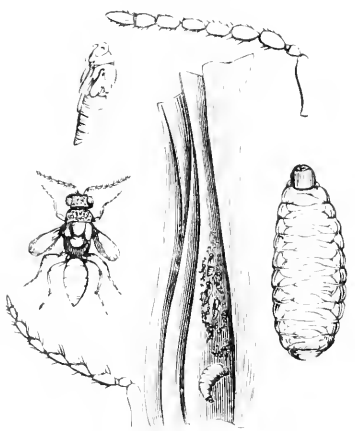

FIG. 59.—CATTLEYA FLY (ISOSOMA ORCHIDEARUM).

4 or 6 tons, and will drive a drum to thresh corn quite easily. The price is £385, delivered at any railway station in England. A week's tuition is given by the agents in its management, and in ploughing as well. The total weight is approximately 2¾ tons. With one four-furrow plough six acres per day of ten hours can be ploughed. The shares vary in width, from 10 inches to 14 inches, according to the type of plough. The former is sufficient for good work, as it cuts off Thistle roots, and the Thistle is the most difficult weed to eradicate. Approximately 5 gallons of paraffin oil is required per day. The machine is started with petrol. In Hampshire, tractor ploughs are much used on all kinds of soil, but the lighter the soil the easier they work. Hilly ground is, generally, not so suitable as flat ground for any kind of tractor.

NAMES OF FRUITS: *W. B.* 1, evidently a seedling from Ribston Pippin; 2, Crimson Queening; 3, Annie Elizabeth; 4, Warner's King.—*S. B. J.* 1, Hoary Morning; 2, Waltham Abbey Seedling; 3, Cox's Pomona; 4, Domino. *E. B. C.* 1, Mank's Codlin; 2, New Hawthornden.

NAMES OF PLANTS: *Col. Northbeach.* No. 9, Crataegus punctata.—*Nimrod.* 1, Crataegus macracantha; 2, Passiflora coerulea, var.; 3, Echium candicans var.

Communications Received.—S. L.—C. H.—H. A. D.—J. G. R.—D. F. A. O.—F. T. (Sydney)—H. A.—L. K.—F. A.—J. C. W.—A. F.

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ILLUSTRATIONS.

LOVAGE.

THERE is much of interest connected with the old English herb Lovage, which has been thought to resemble in some degree our garden Angelica. "My fancy form'd Thee an angelic kind" (*Pope*) might well be applied to either herb, or also to Myrrh-like "Sweet Cicely."

Its repute as a domestic medicine seems not to have been countenanced by doctors. It was used as a homely remedy for stomachic complaints, especially for cases of colic and flatulence in childhood; no extravagant claims were made on its behalf as in the case of Angelica, which was professionally prescribed even as a cure for the bite of a mad dog! Probably the origin of Elecampane as a rival drug arose from the absurd superstition of "signatures," but undoubtedly the medicinal property of Lovage was founded upon its pleasing aromatic odour; probably its very name is significant of a prior prevalent idea of virtue, as was undoubtedly the case with Angelica. The latter herb is now classified botanically in the genus Archangelica; thus promoted to archangelic rank, some have supposed it to be dedicated to the Archangel, St. Michael, of whom one feast day is on May 8, when the plant would (in old style) be in flower, but his chief festival, of course, is Michaelmas Day. However, the appropriate Archangel should be St. Gabriel, for the herb has also been associated with the festival of the Annunciation. The semi-pagan Letts of the south-east Baltic shore still, perhaps, associate this herb with their Goddess of Love.

In culinary uses Lovage was always at a disadvantage in competition with Angelica, because it does not furnish such stout, lengthy, and succulent leaf-stalks ready to hand out of the garden.

Then, again, at one time there prevailed some confusion or mistake with misapplications of the name, which will be best understood after seeing all the various competitors for sharing the name set forth as follows:—Old English Lovage, Levisticum officinale; Sea Lovage, or Scotch Parsley, Ligusticum scoticum; Black Lovage, or Alexanders, Smyrnium Olusatrum; Bastard Lovage, a species of the genus Laserpitum; Water Lovage, a species of the genus Oenanthe.

There are other names and variations of the above names popularly given to these herbs; for example, the true Lovage has been called Cornish Lovage, and its chief rival has been termed Scotch Lovage. An author who credited Scotch Parsley with being the herb "Lovage" termed the old English plant "Italian Lovage." Furthermore, the name Lovage has been misapplied to a kind of Milfoil or Yarrow (Achillea ligustica), a plant quite outside the Umbelliferæ family. Similarly, the appellations Angelica and Archangelica have been in a less degree obscured by the latter being connected with the common Yellow Dead Nettle. The public-house cordial named "Lovage," now not much in vogue, probably owes such merit as it may possess to Milfoil and Tansy rather than to the herb after which it seems named. There are other allied herbs in the genera Peucedanum and Angelica which have no real claim to share in the name, but the Spanish Angelica heterocarpa does very closely resemble Levisticum officinale in foliage and perennial habit of growth.

It was once supposed that the true Lovage was never found wild except in the extreme south-west of England, but it is said to be identified with a South European herb growing wild in Northern Greece and the Balkans. It is recorded in Withering's *British Plants* how at one time the true Lovage was believed to have become extinct; and how in 1793 it was rediscovered in a field near Bodmin. Cattle are so fond of this plant that it is liable to become scarce in any pastures where they graze. It is sometimes cherished in gardens for its ornamental foliage, as well as its pleasant odour; it is perennial, and of easy culture.

Sea Lovage growing on the cliffs and rocky shores of Scotland is said to be eaten as a vegetable, but its use thus does not meet with general favour.

Black Lovage derives its appellation from the external colour of its roots. The whole plant is nauseous; but, however, as in the case also with Coriander, the seeds, when fully ripe, are very sweetly aromatic, and much valued for pleasantly flavouring confections of Senna and disguising the taste of other medicinal preparations.

Bastard Lovage is not a native of Great Britain. The species respectively comprised in the genera Laserpitum and Ligusticum have, *prima facie*, much in common regarding foliage, manner of growth, and aromatic odour.

Water Lovage is nearly related to Hemlock, Water Dropwort, and all the species of Water Dropwort (Oenanthe) are suspect or actually poisonous for horses and cows, but it has been stated that one species, called Horsebane, is eaten by sheep. Some doubts which have arisen about the virulence of Water Dropwort poisons are explainable by a belief that, when growing in more northern latitudes, their deleterious qualities are modified, and much of the poison evaporates when the plants are cut and more or less dried.

The utility of the aromatic seeds of Angelica and Lovage is negligible, inasmuch as they are excelled by so many others of our native herbs. These latter, although so estimable and in established use, are rather outrivalled by imported seeds and spices of a more powerfully aromatic character, such as Cardamom and Grains of Paradise.

Trial may disclose that economic utility in the way of salutary and tasty food may be obtained by using the plants of Angelica, Lovage, and probably also the Cow Parsnip (Heracleum Sphondylium), after the manner of Seakale. Sea Lovage and other allied herbs, when treated like Celery, have proved quite inferior.

There doubtless are practised some unavowed employments of Angelica and other herbs for enhancing the flavour of potable concoctions and edible confections. The late Mr. Robertson, of Chelsea, jam-maker and confectioner, deemed such employment very advantageous, and he did not restrict himself to using only Archangelica officinalis, of which species the supply was apt to run short.

Gin distillers use Angelica in combination with Juniper berries, or in partial substitution thereof. From most ancient times Angelica has been one of the chief flavouring ingredients of beverages and liqueurs, but probably it will be known only to a few people that the Muscatel Grape-like flavour of some wines made on both sides of the Rhine is (or is suspected to be) due to the secret use of Angelica. In all these economic uses Lovage can only aspire to take a second place of honour.

Another very old practice is to put a small portion of the fresh herbs into the pot in which fish is boiled. Perhaps the chef of King George III. advantageously treated fish not too fresh in this way.

Several very entertaining books have been written on the myths and legends of plants and flowers; yet the authors, for the most part collecting from many remote countries and old classic books, have but little to say about Lovage. Angelica, however, being dedicated to some Archangel, was naturally associated with the Blessed Virgin Mary and the Annunciation. Owing to its unprepossessing blossom, painters have not portrayed it, nor have poets sung its praises. It is the same with that fantastic literature, the language of flowers; the gay ones are favoured in this kind of imaginative nonsense; genuine folklore is not much found therein, the most part being modern make-up.

A very excellent oldish book, Lindley and Moore's *Treasury of Botany*, contains a plate giving a typical landscape view of "Kamtchatka"; therein tall flowering or seeding plants of Angelica are boldly apparent, rather dwarfing the Birch bushes and stunted trees which are reported to be a leading feature of

that almost Arctic country. These far-northern plants would probably be A. communtata; A. Keiskei grows in Japan. It would be very interesting to learn what the Japanese may be able to tell us about this and like herbs native to their country.

An error in my note on Angelica published in *Gard. Chron.*, September 7, 1918, requires correction: on page 95, in the middle column, line 10 from the bottom, the parenthetical qualification "(leaves)" should read "(not the leaflets of the leaves)." A kind of herbal tea is indeed made of the leaves, but then these have been *previously dried*. The leaves of Lovage are much milder, and a decoction thereof has a very agreeable odour.—*G. Haulstone Hardy (Major, Old House, Twickenham*

DAHLIA CAMBRAI.

THE beautiful, scarlet Collerette Dahlia illustrated in fig. 60 was awarded the R.H.S. Award of Merit and the National Dahlia Society's First-class Certificate on September 10, 1918, when shown by the raiser, Mr. J. A. Jarrett, under the name Peroune. Messrs. W. Treseder and Sons had already given the name Peroune to a somewhat similar, but distinct, variety, and in order to avoid confusion, Mr. Jarrett's flower has, with the permission of the two societies which made the awards, been renamed Cambrai.

The flower is of very regular outline, and the outer florets are cup-shaped, so that the scarlet colouring appears richer or softer according to the pose of the bloom. The "collar" is yellow, slightly flushed with scarlet. The blooms are borne on long, stiff stems, and the variety makes a bold and effective plant for gardens.

Mr. Jarrett, the raiser of Cambrai, is an amateur grower who has won many successes as a raiser and exhibitor of Dahlias, both in the amateur and open classes. At the National Dahlia Society's exhibition in 1917 he won first prizes in each of the seven classes in which he competed, and this year he again excelled in the open and amateur classes for both Paeony-flowered and decorative Dahlias. He has also established the further amateur record of gaining on two separate occasions this year no fewer than three R.H.S. Awards of Merit and three First-class Certificates of the National Dahlia Society, for seedling varieties raised in his garden at Anerley.

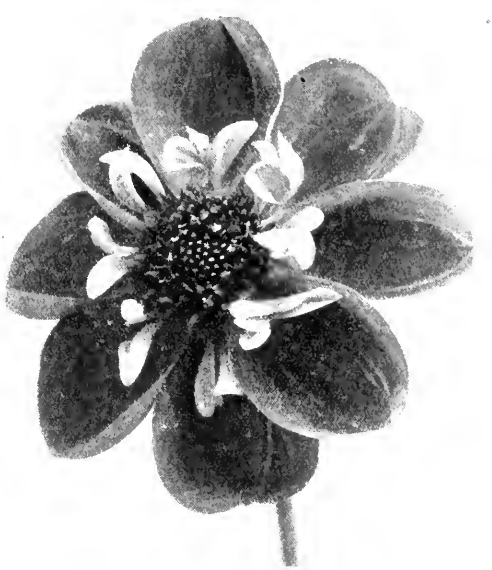

FIG. 60.—DAHLIA CAMBRAI: A SCARLET COLLERETTE VARIETY WITH YELLOW "COLLAR."

ORCHID NOTES AND CLEANINGS.

LAELIO-CATTLEYA ELEGANS.

THIS very variable hybrid, originally imported from the island of Santa Catherina, Brazil, where it was growing with Cattleya Leopoldii and Laelia purpurata, was long regarded as a true species, and was described and figured by Chas. Morren in 1848 as Cattleya elegans (*Ann. de Gand.*, iv., p. 93, t. 185). Although this parent was regarded as a doubtful species in some gardens, and placed under Cattleya, or Laelia, the latter title still having a strong hold in garden nomenclature, its hybrid origin was not suggested until 1877 (*Gard. Chron.*, 1877, II., p. 424), and not authoritatively recorded as Laelio-Cattleya until many years later (*Gard. Chron.*, 1889, I., p. 619). The complications were further increased by the inclusion of L. C. Schilleriana (L. purpurata × C. intermedia), imported with it under the same name.

It remained for Eustace F. Clark, Esq., Evershot, Dorset, by flowering the home-raised cross between Cattleya Leopoldii and Laelia purpurata in 1911, to prove the suggested parentage of the imported natural hybrid, the record being soon afterwards verified by Messrs. Jas. Veitch and Sons.

Mr. Clark now sends a very pretty form, which differs from the original flowered by him. The lanceolate, recurved sepals are whitish-lilac on the face and tinged with green on the reverse side. The much broader petals are tinged with lilac and veined with light mauve. The lip, which has the base closing over the column and the erect tips of the side lobes indicative of C. Leopoldii, is blush-white on the lower half, the interior being tinged with yellow, and bearing thin, purple lines running into the broad, undulated, violet-purple front lobe. Enforced cool treatment is said to have interfered with the full development of the flower, which should be even better when the proper heating of the Orchid house is possible.

LOWIARA INSIGNIS.

FLOWERS of this rare hybrid are sent by Messrs. Stuart Low and Co., who first exhibited this remarkable cross between Sophronitis grandiflora and Brasso-Laelia Helen (B. Digbyana × L. tenebrosa) at the meeting of the Royal Horticultural Society, Nov. 19, 1912, the raiser's name, with the suffix "ara," being used for the generic title in accordance with the rule relating to the nomenclature of new combinations in multi-generic hybrids. Sophronitis grandiflora was the male parent, and in the tint of the sepals and marking of the lip this parent can well be traced, but in size and shape the flower is nearest to the seed-bearing parent. The sepals and petals are 2½ inches long, the latter being more than 1 inch in width; both are coloured light copper-red. The lip, which is well formed, is 2 inches in length, undulate at the margin, and coloured light rose-pink with darker veining and yellowish base and disc.

THE MARKET FRUIT GARDEN.

THE month that has just passed must have been one of the wettest Septembers on record. At my station there were only nine days without rain, and the total fall for the month was no less than 6.23 inches. Towards the middle of the month there was a period of nine rainy days in succession, and on the 29th exactly 1 inch fell in the twenty-four hours. My records go back only eight years, but in that time there has been no approach to such a wet September, the nearest being in 1912, when the total rainfall was 3.48 inches. Naturally work was much hindered, but not so much as might be imagined, because most of the rain fell at night. Had there been a normal crop of fruit to harvest the constant interruptions to picking would have been serious. As it was, the appearance of late Plums was spoiled, rain ruining the "bloom," whilst the gathering of Cobnuts has had to be delayed so long that many of the nuts are falling from the trees. Weeds have grown apace, and it is much to be hoped that October will be dry enough to render hoeing effective.

PLANTING PREPARATIONS.

Preparations are being made for the planting of a new orchard of 3½ acres. This land was under grass in 1917. It was somewhat elaborately drained, ploughed, and subsoiled, and a good crop of Potatos has recently been harvested from it. This crop forms the best preparation for orchard planting, as it pays for liberal manuring with dung, and leaves the land clean and in good condition. Moreover, if mid-season Potatos are grown, they are lifted in ample time to get the ground ready for the trees.

It is advisable to lime or chalk land intended for fruit trees, and we have usually given a heavy dressing of small waste chalk from lime kilns within carting distance. These kilns are now closed, owing to shortage of labour. It would, of course, be possible to buy ground limestone or caustic lime, but I prefer to try basic slag at the rate of 10 cwt. per acre. This fertiliser contains enough lime to last the trees for some time, and I hope that the phosphates will tend towards the production of firm, fruitful wood.

THE BEST FORM OF TREE.

Considerable difficulty has been experienced in getting the necessary trees. The Army has drawn so many skilled men from the nurseries that little propagating has been done, and stocks have become low. In order to obtain trees for this little orchard of 3½ acres it has been necessary to go to no fewer than five nurseries. It is true that I was looking for a form of tree that is not commonly in request—a bush-shaped tree on an 18-inch leg. In many nurseries bushes are trained without any stem at all, or, if they have one, it is not more than

12 inches long. A legless tree probably suits private gardens very well, but it is undesirable in a market plantation, because a band of wire netting is necessary to protect the bark from rabbits. It is, of course, possible to fix netting all around the plantation, but this is much more expensive and a perennial nuisance, being always smothered with weeds and liable to be broken down. Other advantages of a leg are that it keeps the lower branches off the ground and facilitates the work of hoeing and digging.

Bushes versus Standards.

The first orchard planted here was of bush trees on the Paradise stock. Many of them were stunted, sour-covered trees when they arrived: they were not pruned sufficiently for the first few years, and the planting was followed by two seasons of prolonged drought. As a result many of the trees practically stood still and looked as if they never would come to anything. It was decided, therefore, that bushes on the Paradise stock would not thrive on this somewhat poor land, and the other fields were planted with half-standards on various stocks, mostly Crab. I have decided on a return to bushes for several reasons. In the first place, the original orchard did go ahead in course of time, and is now invariably the most profitable on the farm. Low bushes are much more convenient for spraying, pruning, and gathering of the fruit, whilst they are less exposed to the wind, and so give less trouble with windfalls. Many people would say that half standards allow greater freedom for horse cultivation, but my horseman prefers to work amongst bushes, provided that they are not planted too closely together. The main branches of half-standards come out at just the right level to catch the horses, and, as they are stiff, the result is they are often broken. Amongst bushes, only the slender ends of the branches are likely to touch the horses, and these offer little resistance. Then there are several advantages in the use of the Paradise stock. The trees come into bearing earlier than on the Crab or free stock, and produce finer fruit, whilst their roots keep nearer to the surface. This last is an important point here, as the subsoil is of an undesirable nature, and it is noticed that the trees are very liable to canker when their roots get down into it.

Free-growing Varieties.

Eighteen years of fruit growing here have taught us which varieties of Apple can be planted on this somewhat poor land with prospects of success. This is a lesson which every grower must learn for himself, as no one can say with confidence how any variety will behave in a particular district, unless there are other orchards on similar soil in the neighbourhood. Here only very free growing varieties are profitable. The following is my selection for the new orchard: Bramley's Seedling, Blenheim Pippin, Royal Jubilee, Charles Ross, Newton Wonder, Early Victoria, Rival, and Devonshire Quarrenden. The first five have proved their worth here as free growing and very healthy varieties. Early Victoria and Rival have been grown for only two or three years, but they give such good promise that they are included. Devonshire Quarrenden is an experiment. All of these are to be on Paradise stock with the exception of the very prolific Early Victoria. In spite of this they will be planted 18 feet apart each way. Previously we have planted at 12 feet apart, but this proves much too close for these free-growing varieties, even on the Paradise stock. If allowed ample space the trees bear fruit all round, instead of only on the top, as happens where closely planted trees grow into one another. Moreover, I believe that, where the soil suits, Paradise stock better than free or Crab stock, the former will give a tree with just as big a head. Certainly some of the largest trees here are on Paradise. Were their bulky heads perched up on 4 foot stems in the form of half-standards, they would be considered unmanageable, and efforts would be made to keep them within bounds. As it is, their topmost branches are reached for pruning and gathering without much difficulty. Trees planted 18 feet apart certainly look lost at first, but this does not matter when the intervening spaces are planted with Black Currants or some other small fruit. I expect to find that Black Currant bushes have a considerably longer life of usefulness in this orchard than they have between trees planted closer.—*Market Grower.*

CITRUS TRIFOLIATA (SYN. AEGLE SEPIARIA).

Whether in flower or fruit this very strongly characterised shrub, or small tree, is one of the most ornamental that can be grown. In May it is covered with large, sweetly scented white flowers like those of a Citrus. It is commonly known as Citrus trifoliata, under which name it is figured in *Bot. Mag.*, tab. 6,515, and in autumn, in districts where it flourishes, it is covered with yellow, downy fruit which much resemble small Oranges (see fig. 61). It is, perhaps, the most spiny shrub that can be grown in a garden, and the spines, which are straight, sharply pointed, and green like the stem, are from 1 to 2 inches long. Nothing could form a more formidable hedge, but it is not everywhere, perhaps, that the plant can grow with sufficient vigour. In the Cambridge Botanic Garden, where the photograph from which the illustration was prepared was taken, it grows with great vigour against the end of a Fern-house, but a specimen planted on a border not many feet away grew slowly. The plant appears to be absolutely hardy.

By crossing *C. trifoliata* with the common Orange a hybrid, known as the Citrange, has been raised in France with the object, it has been said, of providing an Orange that would flourish in a climate that is too cold for the common Orange. This hybrid was raised some years ago, but I am aware of no report which shows that it has attained a sphere of usefulness. Citrus trifoliata is a native of China and Japan, and is described as one of the most striking Japanese plants ever introduced. It can be raised from British-grown seed, or cuttings of half-ripened wood may be rooted. The

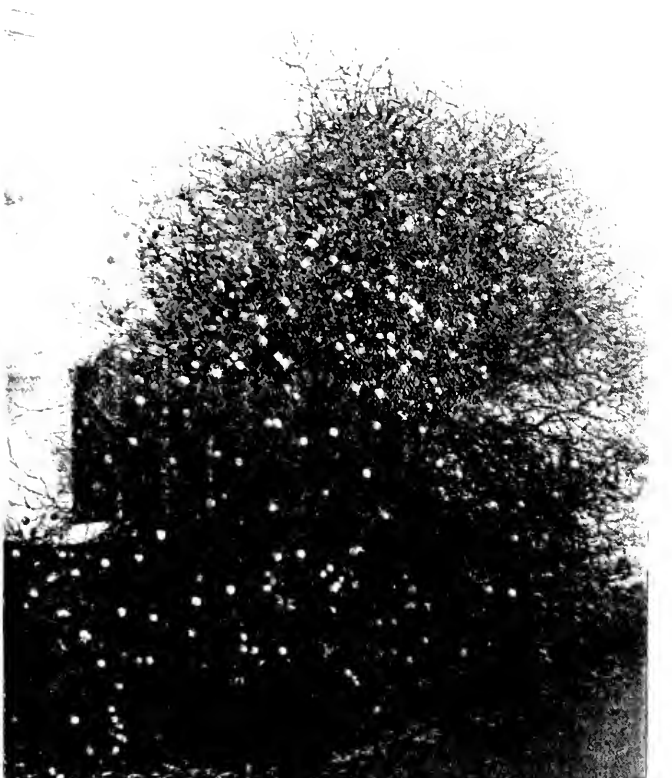

Fig. 61.—Citrus trifoliata fruiting in the Cambridge Botanic Garden.

genus Aegle, to which the plant appears most correctly to belong, differs from Citrus only in having the stamens free from one another. [The *Index Kewensis* refers Aegle sepiaria to Citrus trifoliata. Eds.] The leaves are of interest as explaining the structure of an Orange-leaf. They are trifoliate, and the lateral leaves make a joint at the point of attachment. In the Orange there is a joint where evidently the lateral leaves belong, but obviously have been suppressed. Members of the Rutaceae with compound leaves are, of course, frequent.—*R. Irwin Lynch, Botanic Garden, Cambridge.*

[The illustration in fig. 62 shows the fruits natural size, also the trifoliate leaves and very formidable spines. Eds.]

BULB GARDEN.

CROCUS IRIDIFLORUS.

FLOWERING in the end of September and in October, Crocus iridiflorus is one of the choicest of the autumnal flowering Crocuses, vieing with *C. speciosus* in beauty, and ranking with it as one of the most reliable of these autumnal species. It is delightful as this is written, on the last day of September, when, after a period of rainy weather, a brighter day than usual has induced the plant to open its flowers. Comparing these blooms with the coloured plate in that *magnum opus* of Mr. George Maw, *The Genus Crocus*, one is struck with the inferiority of the colouring in the illustration compared with that of the flower itself. The colour is a rich purple on the outer segments, while the inner ones are of a clear lilac with purple lines. The anthers are orange, the filaments white, and the stigmata rich purple, the whole combination of colouring being exceedingly beautiful. As Maw remarks, this is the only Crocus species with purple stigmata. A noteworthy feature of the flower is that the inner segments are smaller than the outer ones, and the general effect is like that of some of the Irises, hence the name iridiflorus. The name of *C. byzantinus* has also been given to this Crocus, but, although it has priority in point of time, it is misleading, and there seems a pretty general agreement that iridiflorus should be accepted. *C. iridiflorus* is a native of Hungary, the Banat, Wallachia, etc., and is hardy in this country. The corms should be planted about an inch deep. *S. Arnott.*

"BLINDNESS" IN THE DOUBLE WHITE NARCISSUS.

Now that the time for planting Daffodils has arrived, it may be useful to direct attention to the so-called "blindness" in Narcissus poeticus fl. pl., for the malformation is among the perpetual worries of the gardener. With all the Narcissus tribe the embryo flower for the ensuing year is made with the maturing of the leaf of the preceding year; a fact which renders weather conditions not a little responsible for either good or indifferent flowering. In this connection it will be remembered that the double white Narcissus referred to is probably one of the last to flower, hence it has to complete its growth and lay the foundation of the next season's flowering virtually during high summer time. With great heat or continued drought prevailing, it is easy to see that this would be imperfectly done, with "blindness" in the following year as the inevitable result. Many years ago I began experimenting with a view to discover, if possible, the cause of the trouble. Growers of the variety variously attributed the failure to "drying winds at flowering time," "spring frosts," or "malnutrition." My soil at the time was light loam over gravel, which became very dry in summer, the season of growth in the plant being considerably shortened in consequence. Convinced that this, in conjunction with summer heat and absence of root moisture, were the contributory causes of the blindness, the aim of the experiments was to reverse these conditions entirely. Some of the bulbs were grown in pits, in pots, the latter standing in saucers of water, and others were placed in a low-lying bog bed, into which much surface water entered. Others were planted later near the side of a pond, where, once they had become established and with roots in constantly cool, moist, and often wet ground, blindness was unknown. Since those early experiments I have frequently planted the bulbs in ground often flooded in winter time, with the best results. Planted in deep, cool, or moist ground, the growing season of the plant is lengthened and its other functions following in due order immunity from blindness is practically secured. Lifting and drying is unsuited to this variety, because of a propensity to continuous rooting, hence permanently planted bulbs give the best results. This variety, too, like *N. maximus*—another lover of cool, stiff, moist soils—succeeds best if deep planted, and a minimum depth of 6 inches should be allowed. *E. H. Jenkins.*

AUSTRALASIA.

PHOENIX CANARIENSIS IN AUSTRALIA.

OWING to war conditions, my copies of the *Gardeners' Chronicle* reach me at irregular intervals, and it was only to-day that I read Mr. J. H. Maiden's reply to my communication published in your issue of March 3, 1917. In Mr. Maiden's first communication to you he distinctly stated that nothing was known in Australia about the origin of Phoenix canariensis, and now he professes to know everything about this Palm. My letter, that appeared in your issue of March 3 of last year, supplied the correct information about the introduction of the seed of Phoenix canariensis to Australia, and its subsequent planting, and the information concerning the original source of the seeds has since been confirmed by the authorities at Kew. I also stated that Mr Charles Moore had informed me that when Sir William Jackson Hooker and Sir Joseph Dalton Hooker (the latter name was deleted from the letter-press, although it appeared in my manuscript) were directors at Kew they had supplied the seeds of most of the Palms, including Phoenix canariensis, which I first planted in the Garden Palace Grounds, Sydney. I probably knew Mr. Moore longer than any man now living, and I had considerable official intercourse with him. First, when the Government of New South Wales instructed me to re design many of the shrubberies and flower beds in the Botanic Gardens, Sydney, and afterwards when they appointed me to take charge of the Garden Palace Grounds, much of which I designed, laid out, and planted. I have in my possession a letter from Mr. Moore in which he refers to the important professional work I had been engaged in at the Botanic Gardens and Garden Palace Grounds, and the great skill I had displayed in carrying it out. It was my work in those public gardens that attracted the attention of the late Hon. Sir Alfred Stephen, G.C.M.G., Lieutenant-Governor of New South Wales, and of the late Hon. Dr. James Norton, LL.D., M.C.L. (member of the Legislative Council), who appointed me to re-design, lay out, and beautify Hyde Park, Sydney, and amongst the many improvements I effected in that public park was the planting of the groups of beautiful Palms now growing there.

In *Gard. Chron.*, Oct. 6, 1917, Mr. Maiden states "that Mr. Charles Moore was the most autocratic of men, and never was known to give anyone a free hand in anything." During my long intercourse with Mr. Moore, both socially and officially, I found him at all times most considerate, and I was indebted to him for many valuable suggestions in the course of our official work.

When Mr. Maiden's first letter appeared in the *Gardeners' Chronicle* concerning Phoenix canariensis, the leading Australian landscape gardeners and nurserymen spoke to me on the subject, and said that "if Mr. Maiden had addressed a letter to the local Press, or to myself, he could have obtained all the information he desired about the Palms I planted in the Garden Palace Grounds." If this had been done, it would not have necessitated him writing to you about alleged conversations with the late Mr. Camfield, and who had no more to do with planting the original group, and the only one, of Palms in the Garden Palace Grounds than the proverbial "man in the moon." The last paragraph of Mr. Maiden's letter tries to obscure facts by the introduction of matters not relevant to the subject. *Fred. Turner, Chatswood, Sydney, July 17, 1918.*

The Week's Work.

THE KITCHEN GARDEN.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

Cucumbers. — Old Cucumber plants which have been in full bearing for some time, and show signs of declining vigour, should be discarded. The restoration of old plants, either by thinning the growths or stimulating the roots at this season is rarely satisfactory. Young plants make better progress, but from this date onward they require careful treatment in order to make healthy, short jointed growth that will produce fruit freely during the winter. Maintain a sweet, moist atmosphere by damping the floor and walls of the house frequently. Grow the plants in a moderate temperature, and do not over-crop them. Stop the shoots frequently, and train them thinly and regularly over the trellis in order that the light and air may enter all parts of the house. Frequent light top-dressings of fresh compost applied warm will encourage the roots to grow and keep them healthy. An excellent compost for winter Cucumbers is formed of two-thirds light, rich turf, free from worms, and one-third old lime rubble, with a good sprinkling of bone-meal and a dash of soot. The soil should be mixed thoroughly, and placed in a warm, dry corner for future use. Plants growing over the water-pipes must be watered carefully; sufficient water should be used to moisten the whole of the soil and keep the lower roots thoroughly moist. Later plants intended for cropping early in the spring should be encouraged to grow steadily. Let them have plenty of light and a little air on all favourable occasions.

Lettuce and Endive. Lettuces which are ready for use, also those for cutting early in winter, should be lifted and placed in cold pits until required for use, or where shelter can be readily afforded them. Small seedlings of later-sown batches of Lettuce and Endive should be pricked out into cold frames or under the shelter of walls. Endive should be planted 1 foot apart each way, and encouraged to grow quickly by stirring the soil frequently with the Dutch hoe in fine weather. All available frames should be filled with Lettuce, while the hardiest kinds, such as Bath Cos and the hardy Cabbage sorts that are sown thinly to mature where they are sown, should be thinned, and the soil amongst them stirred to get them well hardened before winter. Dust the plants lightly with soot at short intervals as a deterrent to slugs.

THE ORCHID HOUSES.

By J. COLLIER, Gardener to Sir JEREMIAH COLMAN, Bart., Gatton Park, Reigate.

Miltonia. — Plants of Brazilian Miltonias, such as M. Regnelii, M. Binotii, M. spectabilis and M. s. Moreliana, should be kept rather dry at the roots after passing out of flower. Just sufficient water should be given to prevent shrivelling of the leaves and pseudo-bulbs, and this treatment must be continued until growth becomes active again in the New Year. M. cuneata, M. Clowesii and M. candida are developing their flower-spikes; as they pass out of flower they should be given the same treatment as recommended for the others. These plants are very subject, and especially at the present time, to attacks of red spider; as a precaution the leaves should be sponged occasionally with a solution of soft soap and tepid water. M. Roezlii, its variety alba and M. Phalaenopsis are of very delicate constitution, and require very careful treatment. They require a slightly higher temperature than either of the above-mentioned species or M. vexillaria, and succeed best in the shadiest and warmest position in the Cattleya house. Any plants that have commenced to grow may, where found necessary, be given fresh rooting materials. The compost should consist of equal parts of Osmunda fibre or A1 fibre and Sphagnum-moss, cut into short portions, with a liberal addition of crushed crocks.

Aerides, Angraecum, and Saccolabium.—Many plants of these genera that flower in the spring and early summer will have completed their season's growth soon, and the supply of water at their roots should be reduced gradually. Although these Orchids never cease making leaf growth, it is important to allow them a short period of rest. When the plants are in active growth the compost should be watered sufficiently to keep the moss on the surface green and fresh, but from now onwards through the winter the moss should be allowed to dry to a greenish-yellow colour before water is applied. Such of the cool growing Aerides as A. crispum, A. Lindleyanum, A. crassifolium, and A. Warneri are still growing actively, and for some time to come should be kept moderately moist at the roots, and grown in a shady position in the Cattleya house. Angraecums that are in full growth, including A. sesquipedale, A. Eichlerianum, and A. pellucidum still require plentiful supplies of water, whilst A. eburneum and A. Monteirae are sending up flower-spikes, and should also be kept moist at the roots.

THE HARDY FRUIT GARDEN.

By Jas. Hudson, Head Gardener at Gunnersbury House, Acton, W.

Root-Pruning.—The root pruning of trees needing this operation should be commenced at once, as an early start will enable the roots to make good growth before severe frosts occur. First finish the pruning of the branches, but do not prune severely, for if mild weather continues there would be a danger of the plants continuing to grow freely, and especially in the case of Pear trees on the Pear stock. Remove the sappy shoots, then exercise judgment in the case of the more ripened wood. In the case of large trees, the time-honoured system of root-pruning only one half of the tree one year and the other half in the following season is advised. It is far better to root prune than to severely prune the branches. To do the latter would often result in canker. Procure a quantity of good soil that has not been in contact with the roots of fruit trees, and work this around, under and above, the roots. Shorten all strong, sappy roots as the work proceeds and replace the tree in its old position, unless it is seen that moving it is desirable, such as in the case of bush trees and pyramids that may be growing too near the pathways. I do not advise the use of manures of any kind. After pruning the roots see that the trees are made firm in the soil and well watered. Then secure them to stakes to guard against disturbance during strong winds.

The Planting of New Orchards.—There comes a time when it is expedient to consider the necessity of preparing ground for planting new orchards. To attempt to renovate an old orchard when it is evident that the trees are on the decline is not profitable. The planting of Apple trees after Apple trees is a bad practice, and the same is true of other kinds of fruits. I do not refer so much to orchards planted for market purposes as to those in private establishments. I recommend that a new orchard be only partially planted the first season and completed the following year, when the ground has been entirely broken up. For the first season, now that labour is scarce, if the new orchard is on pasture land, the grass may be retained and broken up as time permits. I prefer pasture land to arable land that may have been either badly cultivated or heavily cropped. In private orchards the mixing of standard trees and bushes, such as Currants and Gooseberries, is not to be recommended. The bush fruits may, in most cases, be grown in the kitchen garden. Considerable discretion needs to be exercised in the choice of a site for an orchard. The soil may not be all that one could wish, but with due care it may be made suitable by draining, which, in the case of heavy and waterlogged ground, is essential. If time presses it is not essential to do this immediately, for the trees may be planted and the drains laid in the early spring following. It is not expedient to drain light land, nor it is so essential if the land slopes, so that superfluous water drains away naturally. An orchard should be exposed to the south and west. If old brick rubble and mortar rubbish are available, make good use of these materials in the soil, more particularly in heavy land. Place some of the brick and mortar rubbish at the bottom of the hole, and place turves upside down upon them. Do not use animal manure, even in the poorest of soils. Rather apply loam of better quality than that of the orchard. Make the holes deep and wide. When planting is completed apply a mulch, which in time, by hoeing, will become well mixed with the soil. For most orchards in private establishments dwarf trees on the Paradise stock are to be preferred to any other kind for Apples, whilst Pears worked on the Quince stock are invariably the best to plant. Bush Apples are more suitable than pyramids, but for Pears the pyramid tree is best. The best distance at which to plant is 12 feet, and the trees should be arranged quincunx fashion. For standards a distance of at least 24 feet is advisable. If the Apples are strong growing varieties a space of 24 feet should be allowed. With standards at this distance the ground may be filled with bush fruits as occasion requires.

THE FLOWER GARDEN.

By R. P. Brotherston, Gardener to the Earl of Haddington, Tyninghame, East Lothian.

Dahlias are of conspicuous value during the autumn, as the plants fill large spaces at little cost of time and labour. The tubers should be lifted before the stems have been frosted, with as much soil as can be retained preserved on them. There is no better preservative than such soil to keep the tubers from shrivelling. The roots are stored in heaps just like Potatos, and, with the exception of Pompon sorts, which I find rather liable to rot, they come through the winter in perfect condition.

Hybrid Lobelias.—These plants are very erratic in their winter behaviour, sometimes great losses occur, at other times the losses are insignificant. They are all but hardy, and I have known plants left in the ground come through the winter with fewer losses than those preserved under glass. Like Montbretias, they cannot be kept too cool, and ordinary frost does them no harm. A cool frame, on the floor of which the clumps may be set closely together, with some light soil or leaf mould intermixed to fill interstices, is the best place for storing them in. The soil should not be shaken from the roots, but, on the contrary, good balls should be secured on lifting and preserved intact.

Montbretia.—There is a difference in the hardiness of Montbretias, and, as a rule, it is better to err on the side of safety by lifting the corms annually, especially of the newer varieties, than to risk losing them during lengthened periods of frost. It must be remembered that growths develop very early in the year, and the plants may be lost altogether if the corms are stored in a place much above freezing point. They are, indeed, so nearly hardy that were we to have only ordinarily severe winters there would be no advantage in lifting them beyond the need of giving more space when the growths become so congested as to spoil the production of flowers in profusion.

FRUITS UNDER GLASS.

By W. J. Grise, Gardener to Mrs. Dempster, Keele Hall, Newcastle, Staffordshire.

Early Peaches and Nectarines.—The trees in the early Peach and Nectarine houses should be examined carefully for any faulty or overcrowded shoots that may have been overlooked when the leaves were on the trees. If the summer pruning was efficiently carried out very little further pruning will be required. The branches should be let down, carefully tied into bundles, and clung to the trellis or wires preparatory to thoroughly cleansing the woodwork and glass of the house with soapy water. A mixture of quicklime, sulphur, and a little soft soap forms a suitable wash for the walls. The cleansing of the trees is a very important operation, as every shoot should be carefully washed, or scale insects and red spider may escape complete destruction. Any suitable insecticide may be used; for those who care to make their own specific one quarter of a pound of common brown soap to a gallon of warm, soft water forms a safe and efficient wash. Support the young shoots on the palm of the hand and carefully wash them, using a half-worn paint brush, and a stiffer brush for the main stems and branches. When the trees are quite dry, first tie the main branches to regulate the shape, then fasten the young wood of the present year's growth in position, taking care that each shoot is at least 4 inches from its neighbours. Ventilate the house to its fullest extent both day and night.

Apricots.—Root pruning and renovating the borders is as necessary for Apricots as for any other stone fruits. Most growers lift and rearrange the roots in a horizontal position the third autumn after planting. Light fibrous loam and old mortar rubble should form the bulk of the compost, with a sprinkling of bone-meal, wood-ash, and soot. Let the borders be thoroughly moistened before lifting the trees, otherwise the fibrous roots embedded in the dry soil may be broken. Trim the roots and rearrange them in the fresh loam, then make the soil firm and give sufficient water to settle it about the roots. Defer tying the branches to the trellis until the trees have settled finally.

Strawberries.—The continued wet weather has not been favourable to Strawberry plants intended for next year's forcing. Still, much may be done towards ripening the crowns by removing the plants to shallow frames, where protection may be given during times of heavy rain. Keep the pots free from weeds and remove all runners. Move the pots occasionally to prevent the roots growing through the drainage holes. Plenty of ventilation is essential both day and night; air may be admitted by tilting the lights, but in such a manner as to protect the plants from rains. In fine weather remove the lights entirely.

PLANTS UNDER GLASS.

By E. Harriss, Gardener to Lady Wantage, Lockinge Park, Berkshire.

Euphorbia (Poinsettia) pulcherrima.—The bracts are developing on Poinsettias, and a drier atmosphere must be maintained. With the shortening days and less sunshine the roots are not absorbing so much moisture as hitherto, and the plants should be examined carefully before water is given them. When the bracts are fully expanded discontinue the use of stimulants. Ventilate the house with extra care, admitting a little air through the top ventilators during the night to ensure a dry atmosphere. A night temperature of about 50° is suitable.

Pelargonium.—Grow winter flowering Pelargoniums near the roof glass in a light, airy glass house. With care they will flower during the greater part of the winter. The roots require a fair amount of water, and this should be supplemented occasionally with some form of stimulant. Whenever the weather is favourable admit air freely, and use fire heat only to keep out frost.

Roman Hyacinths.—The bulbs of Roman Hyacinths which were potted early will soon be ready for removal from the bed of ashes in which the pots were plunged. Place them for the present in cold frames. When they have made sufficient roots, a batch may be introduced into a warm house and gently forced into flower. It is doubtful if crowns of retarded Lily of the Valley will be obtainable this season, and Roman Hyacinths will form a good substitute. Batches of bulbs may be potted at intervals to ensure a long supply of flowers.

Early Narcissus.—Bulbs of Paper white Narcissus which were potted early should be examined, and if well rooted they may be taken from the bed of ashes and placed in a cold frame. It is unwise to attempt to force Narcissi until the pots are full of roots; even then much fire heat is undesirable. They will develop their flowers freely in a moderately warm temperature, and the blooms will be much more useful when grown in this manner.

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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.*

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APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY, OCTOBER 21—
Nat. Chrys. Soc. Floral Com. meet at Essex Hall, Essex Street, Strand. Exec. Com. meet., 35, Wellington Street, Covent Garden.

TUESDAY, OCTOBER 22—
Royal Hort. Soc. Coms. meet

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 48·1°.

ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, *Wednesday*, October 16, 10 a.m.: Bar. 29.8, temp. 52°. Weather—Dull.

Green Manuring.

There can be no doubt but that if soil fertility is to be maintained in gardens and allotments green manuring will have to be practised much more generally than is at present the case.

It looked at one time as though the pig would enable many gardens to supply to the soil the necessary humus-containing manure; but the difficulty of obtaining pig-food is so great that many people can scarcely manage to keep a few where otherwise they would be willing to keep many.

Thus, the intensive cultivator must have resource to green-manuring, supplementing this system by the judicious use of artificials.

But even in the case of a green manure crop the choice is very limited, and indeed at the present time Rye is probably the only plant which can be sown for digging in in the spring. Fortunately, it is one of the best, if not the best, for this purpose. On light land it often proves far superior to Mustard—which latter crop it is, of course, too late to sow now. From our experience, indeed, in certain cases Mustard as a green manure crop is useless on light land, but before accepting this assertion as generally true it would be interesting to have the experience of others who have tried it. In spite of the fact that it may make an excellent stand when dug in in the autumn, on sandy hungry soils, it is apt to leave no impression on the crops sown in the succeeding spring. Nevertheless, there is the general belief which must be put to the credit of this crop that it helps in some obscure but potent way to clear the ground of soil-pests such as wireworm.

One great advantage of Rye is that it makes rapid growth early in the year, and is ready to dig in in time to admit of the planting of main-crop Potatos, but it must be remembered that if the digging in is late, light soils will not have had time to settle down, and hence not be suitable for the sowing of small-seeded crops. Needless to say, when the "straw" is dug in at about 15 inches in height, it should not be buried deeply: if just covered by the top spit of soil, that will be deep enough.

Another means of assisting in the maintenance of soil fertility which is not so generally known as it should be is by the application of potassic manures, of which the only one readily available at present is wood ash. Liberal dressings of wood ash are of the greatest assistance to most soils, and in particular its benefit will be shown on light soils in time of drought. For potash, by prolonging the season of growth, helps the plant to hold on its vegetative way when otherwise it would be tempted to bolt. Those who so often fail to prevent Spinach and Lettuce from bolting might well try the expedient of dressing liberally with wood ash the ground which is destined for these crops.

Yet another method of increasing fertility and improving the working of heavy, unkindly soils such as are met with in some parts of Sussex is by growing Lucerne. At the present time, however, this is out of the question.

If, as there is every reason to expect, the difficulty of obtaining supplies of natural manures goes on increasing, green-manuring will inevitably become a routine practice in the vegetable garden. For our part, we think that it should be so now, for its benefits are certain and the cost of the operations involved is not high. We have said nothing of the other Leguminous crops, such as Vetches and Lupins, which are suitable for this purpose partly because for them to be of use they must be sown earlier in the season, and partly because the supplies and price of seed tend to preclude them from use for the purpose of green-manuring.

Royal Horticultural Society. — The next meeting of the Committees of the Royal Horticultural Society will be held at the London Scottish Drill Hall, Buckingham Gate, Westminster, on Tuesday, the 22nd inst. At the 3 o'clock meeting of the Fellows Mr. ARTHUR W. SUTTON, J.P., will lecture on "The Great Value and Importance of Sowing in July and August for Producing an Additional Crop of Vegetables during the Autumn Months and thus adding to the National Food Supply." Mr. SUTTON'S address will be illustrated by lantern slides.

Horticultural Club.—The luncheon held by the Horticultural Club on Tuesday, the 8th inst., was attended by some forty members and friends. The Committee has decided to hold a luncheon at 2, Whitehall Court, on the occasion of the Royal Horticultural Society's fortnightly meeting, on November 5. The price of the luncheon, exclusive of wine, will be 3s. 6d. Those intending to be present are asked to notify the hon. secretary, Mr G. F. TINLEY, 41, Wellington Street, Strand.

Flowers in Season.—From Messrs. R. VEITCH AND SON we have received blooms of Nerine Bowdenii and the pale-coloured variety named pallida. The spikes of both were unusually vigorous, and were cut from plants growing in the open in their Exeter nursery.

Fruiting Barberries.—Mr. T. SMITH, Daisy Hill Nursery, Newry, has sent us a selection of fruiting Barberries. The forms of Berberis vulgaris, including asperma, also B. sinensis, are particularly beautiful, but much excelled by the fruits of Berberis virescens fructo coccinea, which, Mr. SMITH states, "excels all others of the family." To show how very variable Berberis virescens comes from seed, Mr. SMITH sends shoots in which the berries vary from bright red to black. In addition to the Barberries were sprays of Cotoneaster Franchettii, the coral-red fruits contrasting finely with the grey-backed foliage.

A Large Peach.—Mr. ALFRED T. GOODWIN, Roseholme, Maidstone, writes: "I have just gathered a Peach of the Salwey variety, weighing 15½ oz., and measuring 12½ inches in circumference. This season there were about 60 other fruits on the tree of Salwey, and some of these were included in the annual presentation made by the Fruiterers' Company to the Lord Mayor on Wednesday, the 9th inst. The 24 Salwey Peaches included in the gift weighed between 9 oz. and 10¾ oz. each. Have you any record of any Peach larger than my fruit of Dr. Hogg, weighing 25¾ oz., which I gathered in 1880?" We have no entry in our "Record" book of a Peach larger than Mr. GOODWIN'S fruit of Dr. Hogg variety, which was recorded in *Gard. Chron.*, August 27, 1881, p. 272.

Gift of Fruit to the Lord Mayor of London.—In accordance with an annual custom established many years ago, when the Lord Mayor of London surrendered his right to levy a toll on fruit brought into London, the Master, Wardens and Court of the Fruiterers' Company on the 9th inst. made a gift of fruit to Colonel Sir CHARLES HANSON, M.P., the retiring Lord Mayor. The present included Grapes, Pears, Strawberries, and Peaches. Alderman MOORE (Master of the Company), in responding to the toast given by the Lord Mayor at luncheon after the presentation, stated that as the outcome of a conference of horticulturists it was proposed to form a new Chamber of Horticulture. He hoped that this Chamber would weld together all the various associations in the country which were interested in the subject without interfering with their local work, and that, as a result of its efforts, the home-grower would have a better chance in the future.

Highbury Presented to the Nation by Mr. Austen Chamberlain.—At the meeting of the Birmingham City Council on Tuesday, October 15, the Lord Mayor moved a resolution of thanks to Mr. AUSTEN CHAMBERLAIN for his generous and public-spirited gift of Highbury, the residence of the late Mr. JOSEPH CHAMBERLAIN, as a permanent hospital for limbless and chronic orthopædic cases of Service or ex-Service men. Mr. CHAMBERLAIN wrote to the Lord Mayor: "It is not without regret that I break my connection with a house which was my home for more than thirty years, and around which so many memories, public and private, gather; but since it is not possible for me to make it my home any longer I believe that my father would have approved the purpose to which it is to be devoted."

War Items.—Mr. GEORGE S. MORGAN, second son of Mr. JOHN FORBES MORGAN, gardener at Holme Chase, Weybridge, joined the Royal Engineers as a private the day war broke out, was later promoted to sergeant, and subsequently received a commission. He won the Military

Medal and a bar to it the following week. He has also been awarded the Military Cross for bravery. Mr. Morgan started his career as a gardener, but later joined the staff of the Great Northern Railway.

—— Sergt. Horace Eli Freeman, who was killed in France on September 29, joined the Forces in 1914. Prior to enlistment he was a representative of Messrs. Dunns' Salisbury), in West Hants and the Isle of Wight. He was a man of fine physique, and possessed a genial and courteous manner which secured for him many friends both in the Army and civil life. He fell leading his platoon in a charge against the enemy. Before the war Sergt. Freeman was treasurer of St. Michael's Church, Bournemouth, in which town he resided. A brother N.C.O., in a letter to his parents, wrote: "We all feel that England has lost one of the finest men she ever sent to the Western Front."

— Kew men in many lands will hear with great regret of the death of Mr. Arnold Duley. When war broke out, Mr. Duley was gardener at the Haraks Estate of his Serene Highness the Grand Duke George of Russia, in the Crimea. After a long and, at times, perilous journey overland and in northern waters, he reached England in 1915. Joining the Somerset Light Infantry, he went with the seventh battalion to France, and was in much hard fighting. He had gained the Military Medal, before being taken prisoner in 1917. For a time Lance-Corporal Duley was in the Dulmen Prisoners' Camp, and in February, 1918, was sent to work in Belgium, where he died in hospital at Tournai on March 14. Mr. Duley entered Kew from Codicote Lodge Gardens, Welwyn, Hertfordshire, in March, 1906, and on completion of the two years' course was appointed foreman in the Cardiff Public Parks.

REMARKS ON THE CONDITION OF THE FRUIT CROPS.

(See Tables in *Gardeners' Chronicle* for August 3, p. 42.)

(*Concluded from p.* 138.)

IRELAND, S.

Kerry. It is difficult to account for the smallness of the Apple and Pear crops this year.

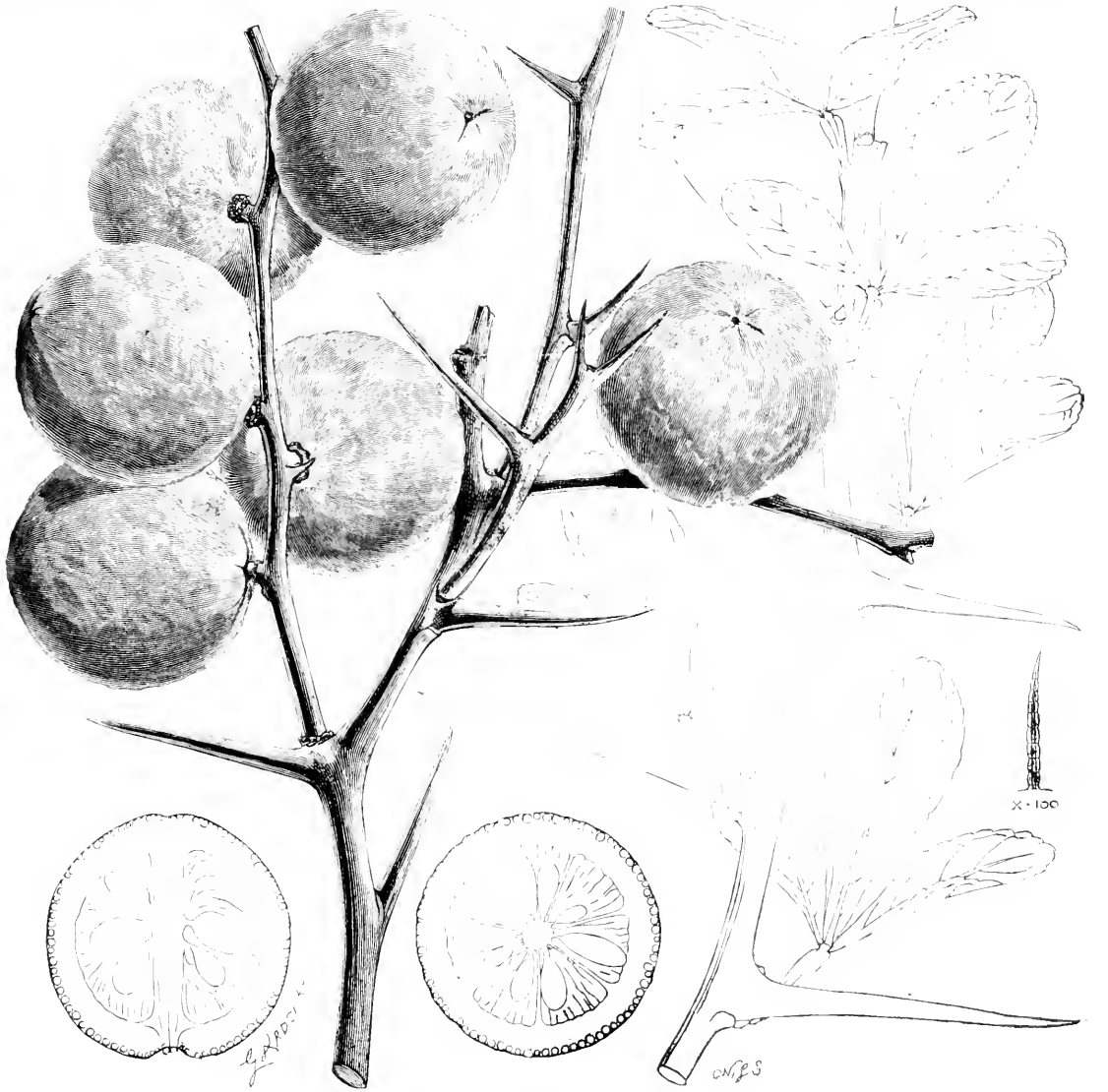

Fig. 62.—Fruits and foliage of Citrus trifoliata: a hardy orange.

(See p. 157.)

The trees flowered well and in good weather, and few insect pests troubled them, yet only a small proportion set any fruit. Young trees gave better crops than old ones. Soft fruits bore good crops, especially Red and Black Currants. Strawberries yielded a light crop owing to a period of drought after the flowers had set. The only serious pest has been the caterpillar of the Gooseberry Saw Fly. *Charles W. Bennett, Muckross Abbey Gardens, Killarney.*

KILDARE.—The crops here were very poor: Strawberries and Gooseberries were a complete failure. Red spider and aphis are most troublesome, in spite of spraying. The soil varies from a heavy, retentive clay over limestone, to a sandy loam. *Frederick Streeter, Straffan House Gardens, Straffan Station.*

KILKENNY.—The scarcity of fruit in this district is the result of the extremely mild winter. All kinds of fruit came too early into growth and flower, with the result that the cold snap in April did the maximum amount of damage. Apricots flowered at the end of February, but these, being covered at night, have carried a splendid crop. Strawberries on south borders began to flower in March, and in some cases three lots of flowers were blackened successively. Strawberries on north borders, on the contrary, were very good indeed. Plums varied considerably, some trees being laden with fruits, whilst others were quite bare. These, however, in many cases, were over-cropped last season, when, owing to scarcity of labour, thinning could not be carried out. With regard to Apples, generally speaking early varieties were much better than late ones. Such dessert varieties as Irish Peach, Worcester Pearmain, and James Grieve carried good crops, whilst Cox's Orange, Chas. Ross, and Allington Pippin were failures. Amongst cooking varieties Lord Grosvenor, Grenadier, Yorkshire Beauty, Lane's Prince Albert, and Tower of Glammis were very good. Figs outdoors are the best crop we have had for some years. *T. E. Tomalin, Bessborough, Piltown.*

KING'S COUNTY.—The frost and cold winds during the month of May caused considerable damage to all large fruit trees. The heavy hailstorms during the second week of July damaged some of the Apple and Pear fruits; in fact, in some parts of the country the fruits were very deeply cut with hailstones. Aphis was very prevalent during the dry weather. *E. Clarke, Clare mount, Garry Castle, Banagher.*

LIMERICK.—The Apple crop in this district did not fulfil the expectations that were held during the blossoming period. Owing to frost and cold showers of hail, there was a poor set of fruit. Some varieties of Apples carried good crops, while others were very thin, but of good quality. The blossom wilt seems to be spreading in spite of cutting and burning all diseased shoots. Pears were a failure; only a few scattered fruits of poor quality developed. Plum trees bore a nice, even crop, of good quality, but Damsons, although covered with flower, failed to set any fruit. Small fruits gave remarkably heavy crops, Gooseberry bushes in particular being weighted to the ground with fruit. Strawberries were very large on young plantations, and two-year-old plants bore an abundance of fruit of small size. The soil here is heavy loam over limestone rock. *Harry Nixon, Rockbarton Gardens, Kilmallock.*

QUEEN'S COUNTY.—Apples were very promising in the early part of the season; nearly every variety had a profusion of bloom, but most of it dropped off. This was probably due to the unusual dryness of the season; there was no frost during the period they were in bloom. All small fruits were very good. *G. McGlashan, Abbey Leix Gardens.*

WATERFORD.—All fruits, with the exception of Gooseberries, Raspberries, and Black Currants, were very poor and scarce. There were practically no Apples, Pears, or Plums, but Gooseberries, Raspberries, and Black Currants gave abundant crops of good fruit. The soil is rather light, on a clay subsoil. *D. Crombie Curraghmore Gardens, Portlaw.*

CHANNEL ISLANDS

JERSEY.—The fruit crops in Jersey this year have been very poor. This is locally attributed partly to the damage caused by a blizzard last season, and partly to the cutting east wind this year when the trees were in bloom. *T. Sharman, The Imperial Nursery, St. Heliers.*

HOME CORRESPONDENCE.

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

Augmenting the Fuel Supply for Glasshouses.—Two items of fuel not mentioned, I think, in your leading article on this subject in the issue for September 28 [see *Gard. Chron.*, July 6, p. 6.—EDS.] are worth noting, namely, ashes and cinders. On many estates there is to be found in some out-of-the-way corner a heap of ashes and clinkers which has been collected in pre-war days. The heap should be overhauled and sifted—when, generally, the result will be astonishing; for in those days of plenty the separating of odd pieces of fuel (coal or coke) and cinders was not done very thoroughly. Such siftings, where procurable, will be, in the coming winter, a substantial help to the allotted amount of fuel. Ashes, too, used wet, will effect a saving of better fuel, and they could be used on mild and sunny days. The saving is effected by feeding the fire with the wet ashes occasionally instead of coal or coke, while, if it is not necessary to keep the fire burning, it can be banked with sufficient wet ashes to last for several hours without attention. On re-visiting the furnace it will be found that the ashes have caked together and burnt through, giving a nice body of fire—which in turn can again be fed with ashes or the better fuel as the occasion demands. *C. Turner.*

Apples in Public Parks (p. 142).—Mr. Molyneux has done well to draw attention to the subject of planting fruit trees in public parks. I have advocated such planting for many years, but have been met with the objection that the fruit would be stolen. I maintain that the public has the same respect for fruit as it has for flowers and shrubs. The educational effect on the people of seeing fruit in the public gardens, enabling them to note the best system of planting, pruning, spraying and training, would be valuable, and they could note the best varieties to plant in their locality. Mr. Stevenson deserves congratulations on his bold project. *"Pomo."*

"Rogues" among Potatos.—This case of a Potato "sport," or bud variation, as Darwin terms it, cannot be so readily disposed of as Mr. Arthur W. Sutton appears to think. Because M. Labergerie made a mistake, it does not follow that I also have. Indeed, I know that the tuber which "sported" was a Sharpe's Victor, planted, under my own supervision, in the little vegetable plot, in my garden, by one of my children. I sought advice from the best people, Messrs. Sutton and Sons, who welcomed the enquiry, and said, in a letter of July 24, 1906, signed by Mr. Arthur W. Sutton: "I do not think there need be any difficulty in stating what the variety is, but it might be necessary to plant the tubers in our Trial Grounds next year before coming to a final decision." All the subsequent letters are signed by the firm. In the September following they wrote: "The tubers shall be carefully planted in our experimental grounds next season, and we have no doubt we shall be able to identify the variety for you." In 1907 it could not be named, the growth being weak, it was stated, so in November Imperator and Snowdrop were mentioned for a further trial, saying, "We are much obliged to you for letting us test this Potato." The next month Up-to-Date was added as likely. It was found, in 1908, to be neither. In September that year M. Labergerie was referred to, and I was most kindly given a copy of a brochure printed as a result of a Potato demonstration held at Reading in the autumn of 1906. M. Labergerie's Potato and the Blue Giant were also mentioned. In October, 1908, they wrote: "You may rely upon our planting your Potato next year in our trial grounds. We quite hope it may then prove possible to clear the matter up." In 1909 it remained unnamed, and I wrote to Kew, with the result mentioned in my previous letter, viz., that the Potato did "sport." I wish fully to acknowledge Messrs. Sutton and Sons' great patience and courtesy. I am quite unable to agree with Mr. Arthur W. Sutton's view when he says: "It is quite clear from the instances that Darwin gives that the only kind of bud-mutation he had in mind was that which gave a difference in the colour of the skin of the tuber." Words, in my opinion, could not be clearer than Darwin uses to express the statement that the Potato produces quite new varieties from the tuber. "A single bud or eye," he writes, "sometimes varies and produces a new variety," and of the red variety of Kemp's Potato, "being found a more productive variety": again, in Chapter IX., page 423: "It is an argument of the greatest weight that when varieties are produced by simple bud-variation, they frequently present quite new characters." The cases he quotes are not from his own observation, but from that of others, and it is much easier to notice a change in colour than in some other respects. My letter in 1916 referred to by Mr. Sutton was after the Potato had improved, when I suggested its trial as a marketable sort. I have written these letters to show that "rogues" among Potatos can no longer be treated on the principle of "Give a dog a bad name and hang him." *S. Jackson.*

—— I much appreciate the opportunity you have given me of seeing the letter from Mr. Jackson printed above. When writing the letter which you published on October 5 I had only time to turn up the letters that had passed since the autumn of 1916, but I have now traced all the others to which Mr. Jackson refers, and have verified the quotations he gives as far back as July 24, 1906. I have also been able to turn up particulars of a previous correspondence in 1898, when Mr. Jackson wrote with regard to a Potato he found growing amongst his crop of Satisfaction, and which he thought was a sport, but which we were able to identify as the then well-known white form of Beauty of Hebron, and differing only from Beauty of Hebron in the colour of the skin. In Mr. Jackson's letter which appeared on September 21 he admitted that his "new Potato" was not an advance on Sharpe's Victor, the sort from which he believed it had originated by bud-variation, and the fact of the Potato being of little, if any commercial value was fully confirmed by the repeated trials made in the seasons of 1907, 1908 and 1909, for in each of these years the constitution of the Potato was so poor and weak, that, writing on September 18, 1909, we said that any further attempt to identify the Potato would scarcely be worth the time or trouble spent. The only question of any interest, therefore, is whether the Potato Mr. Jackson found growing amongst the crop of Sharpe's Victor planted by one of his children was, or was not, a distinct variety which has arisen by bud-variation. To strengthen his case Mr. Jackson mentions that it had been repeatedly planted in our Trial Grounds without our having identified it. Mr. Jackson is welcome to attach such importance as he thinks fit to this undisputed fact, but it by no means proves the Potato to have been a sport from Sharpe's Victor. In the great majority of cases identification would be quite easy, although we all know that the soil and climate where Potatos have been grown the previous year so greatly affect the habit of the plant that two samples of one and the same Potato from different sources may differ so much when planted alongside as to be hardly recognisable for the same variety. It is quite possible that in the stress of work involved in examining many hundreds of new seedlings and trial rows of commercial varieties, and visiting and inspecting crops for seed in Scotland and England, the fact that an unpromising Potato had been sent for the purpose of naming might have been overlooked until too late. However this may be, if it was impossible to identify the Potato, there is nothing in what Mr. Jackson tells us which in any way shows it to have arisen by bud-variation. To prove this it would have been necessary in the first instance to have evidence that in the previous year the Sharpe's Victor grown by Mr. Jackson was absolutely true to type, and that no Potatos had been grown on the same land the year before. Secondly, whereas a stray tuber of another variety might have been introduced that year in the manure, it would have been necessary for Mr. Jackson to have ascertained that the tubers he kept and planted the following year were actually produced upon, i.e., attached to the haulm of, a true plant of Sharpe's Victor. Thirdly, that the ground where Mr. Jackson's child planted the tubers the following year had not grown Potatos recently. Fourthly, that by no possible accident had any tubers of another variety been mixed with those his child planted; and fifthly, that

no "crats" or even Potato parings could have found their way into the manure which presumably was applied to the ground. There is always the possibility of some discarded "seedling" finding its way into any stock of Potatos. I still maintain that all the quotations from Darwin which Mr. Jackson gives refer exclusively to colour variation, and the fact that Darwin expressed the opinion that in one case the Potato which showed variation in colour was more productive proves nothing, for this may have been due to nothing more than a change of soil. I hope to deal more fully with the question of bud-variation in a paper I have been asked to read at the forthcoming Conference at Ormskirk on the 30th inst. *Arthur W. Sutton.*

Women's Farm and Garden Union (see p. 151).—The Women's Farm and Garden Union was founded so long ago as 1899, and is in no sense a new war society. It was because of our long experience as to the training and employment of women on the land, in pre-war days, that we were able to do so much, at the outset, in adapting training for the war conditions. The Women's National Land Service Corps is a war branch of the Union. Your notice infers that the Corps was the original body, which is not the case. *S. L. Chamberlain, Editor of the "Monthly Leaflet".*

Polyantha Rose Jessie (see p. 136).—Mr. J. P. Carlisle's interesting note brings memories to me of this beautiful Rose. A few years ago, at Newstead Abbey, Byron's old home—the variety Jessie was planted freely and gave great satisfaction, the plants being a beautiful picture from early summer until October. The soil was very sandy and the garden exceptionally well sheltered. Here, on the Yorkshire Wolds, subject to much wind, Jessie is miserable, whilst the variety Orleans succeeds splendidly. *Sidney Legg, Winter Prang Gardens, York.*

—— The defect of defoliation in Polyantha Rose Jessie referred to by J. P. Carlisle on p. 156 does not obtain with our plant of this variety. The second defect of double flowers is, in my opinion, the result of spotting, as, since care has been taken in the selection of buds no plant with this defect has appeared in our stock. A few plants that produced double flowers have been tried in many situations and soils without success, all the blooms fading to open. *D. Prain.*

SOCIETIES.

STRATFORD-ON-AVON ALLOTMENT HOLDERS'.

At present lack of space did this Society has a roll of nearly 400 members, and held a first-rate two days' exhibition of vegetables in the Corn Exchange at the end of September. The produce was sold during the closing hours of the show, and realised £22 for local charities.

In the open classes H. B. Lyle, Esq., gardener, Mr. A. E. Moss, Bishey Manor, won 1st prize for a collection of twelve kinds of vegetables. Mr. G. Eveleigh and Mr. Nicholls were also successful prize-winners, and Mr. C. Smith had the two-dozen exhibit of Potatos, judged by weight, his twelve tubers weighing 11 lbs. 12 oz.

FAULKBOURNE ALLOTMENT AND COTTAGE GARDEN.

September 25.—The second annual vegetable show of this Society was held in the grounds of Faulkbourne Hall, the residence of the president of the Society, C. W. Parker, Esq.

The show was a great success, the exhibits and especially Potatos were of splendid quality. Messrs. Beard & Hall and S. Kerry supplied the members with 3 sets of Tremedeus Potato for a cropping competition. The 1st prize was won by Mr. F. Challis with a crop of 21 lbs.

Publications Received. *School and Home Gardening.* By Kary C. Davis, Ph.D. (Philadelphia and London: J. B. Lippincott Co.). Price 4s. 6d. net.—*A Monograph of the British Lichens.* Part I., second edition. By Annie L. Smith, F.L.S. (London: Printed by order of the Trustees of the British Museum, Cromwell Road, London, S.W. 7.) Price 30s.

CROPS AND STOCK ON THE HOME FARM.

Wheat Stubbles for Oats.

Where a satisfactory crop of Wheat was produced and the field is free from Couch or other obnoxious weeds, a satisfactory crop of spring-sown Oats should follow with a minimum of expense for labour. Where the soil is heavy and difficult to work in February or early in March, as in my case, it is advisable to sow the Oats broadcast on a "stale fallow." To get the land into this desirable condition it should be carefully ploughed, burying any weeds and the whole of the stubble during October or November. The winter rains and frost will pulverise the surface soil, rendering it quite friable in February or March, when an early start can be made with sowing. Oats sown under these conditions generally succeed much better than those sown later, and certainly such sowing does not involve so much labour is when spring ploughing is practised.

Couch Grass.

The almost continuous rains for the past three weeks have checked the killing of Couch Grass on arable fields. Instead of attempting to clean stubble now by scarifying I advise the early ploughing of such plots, putting on the skim coulters to ensure complete burial of all grass. Where this is neglected, as is too often the case when ploughing is done without the use of skim coulters, it is surprising how quickly the grass grows between the furrows, whereas, where skim coulters are efficiently used, the surface is completely buried and the grass and weeds die. If the Couch does not also die it remains dormant, having no foliage, and if suitable weather is experienced in February or March the land can be cross-ploughed to remove the soil from the Couch roots with a good prospect of eliminating much of the weed. *T. Middleton.*

The Agricultural Outlook.

Late reports received by the Crop Reporters of the Board of Agriculture and Fisheries on agricultural conditions in England and Wales show that September was exceptionally a wet month. Over 4 in. of rain had been carried by the first week in the month, nearly three-quarters of the total average fall for October, and this fall exceeded 5 in. in many parts of the north and west. The crop of Hops has been harvested during most unfavourable weather, and is good to a fair average. In Lincolnshire a certain proportion of the main crop of Potatos has been lifted, but elsewhere little has been done apart from harvesting the early and second earlies, owing to the protracted corn harvest and wet weather. Very little disease is reported, and prospects for a yield about 5 per cent. above the average are still maintained.

Roots have grown well during the wet weather, and promise to be somewhat improved, especially those of Turnips and Swedes, although the are still of small size, and fields are often patchy. Their yield is expected to be about 91 per cent. of the normal, while that of Mangolds, which would have done better with more warmth, is expected to be 90 per cent. of the average.

Turnips grown for seed in the eastern counties have generally yielded satisfactorily, but the quality of much of the Mangold seed has been affected by the wet, and prospects for red Clover are not satisfactory.

Autumn cultivations is, upon the whole, backward, although there are districts—those where much of the corn was secured during August—where it is often considered to be forward. But the very wet weather in most parts of the country prevented much work of this character, even where the corn crops have been cleared. Much plough-ing has been done by tractors, which are of great assistance.

Seeds are rather variable, but in many places there is a good bottom plant, and they are satisfactory on a whole, though often patchy. Some harm is being done by the corn stooks remaining so long in the fields.

Pastures generally have plenty of grass, but from all parts it is reported that its quality or feeding value is poor, owing to the excessive rains.

Obituary.

John Puttock. One of the oldest inhabitants of Kings on-on-Thames, Mr. John Puttock, died at his residence, 28, King's Road, on October 5, aged 84 years. He was born at Bramley, Surrey, and about 60 years ago entered the service of Messrs. Thomas Jackson and Son, nurserymen, of Kingston and Kingston Hill. In 1865 he became head of the glass department, and during the following 25 years he was a very successful exhibitor of the firm's productions at Regent's Park, the Crystal Palace, South Kensington, Manchester, Nottingham, Preston, Birmingham, Southampton, Brighton, Tunbridge Wells, and at other important flower shows, and his services were in frequent request as a judge. On the dissolution of the firm of Messrs. Thomas Jackson and Son in 1886 he took over the goodwill of the business in partnership with the late Mr. G. H. Shepherd. In January, 1902, this partnership was dissolved, and the late Mr. Puttock continued the business on his own account until 1909, when he retired. He was one of the founders of the Kingston and Surbiton Horticultural Society some 57 years ago, and about 15 years later was the prime mover in the formation of the Kingston and Surbiton Chrysanthemum Society. His local interests were not confined to horticulture, for he was one of the founders, and for 14 years joint secretary, of the Mid-Surrey Cricket Club (now Kingston Town), which commenced with twenty members and, largely due to his energy and geniality, increased to over 300 members. Inexorable time compelled him to give up active participation in cricket, so he took up the game of bowls with such success that in his 70th year he won the Kingston on Thames Club's championship. His tall, erect figure was well known in the neighbourhood of Kingston, and his genial disposition made him exceedingly popular. His funeral, at Kingston Cemetery, on October 10, was largely attended by the townspeople, and there were many floral tributes. He leaves four sons and two daughters; his wife predeceased him in 1900.

William F. Dreer. It is with great regret we learn from an American correspondent of the death of Mr. William F. Dreer, of Philadelphia. Death took place on September 8, at Woodstock, Vermont. Deceased was born on November 11, 1849, and educated for the purpose of joining his father in the seed business. When eighteen years of age he went to Germany to study various branches of the seed trade, and subsequently continued his studies in France. Upon his return home he took an active part in the seed and plant industry at Philadelphia, and on his father's death in 1873 he took full charge of the business founded by Henry A. Dreer in 1836. He was greatly liked and widely known, and continued in business until about two years ago, when he was stricken with Bright's disease, which eventually caused his death.

REPLY.

Plants of the Druids.

In reply to the query by *Welsh Reader* on p. 94, he will find several plants that were associated with Druidic rites mentioned in R. Folkard's *Plant Lore, Legends, etc.*, 2nd edit., 1892, from which work I have made the following extracts:—

Apple Tree. The Druids highly reverenced the Apple tree, partly on account of its fruit, but chiefly because they believed that the Mistletoe thrived on it and the Oak only. In consequence of its reputed sanctity, therefore, the Apple was largely cultivated by the early Britons, and Glastonbury was known as the "Apple Orchard," from the quantity of fruit grown there previous to the Roman invasion. The Druids were wont to cut their divining rods from the Apple tree.

Belinuncia. Under the appellation of Kid, or Cridiven the Druids worshipped the moon, which was believed to exercise a peculiar influence on storms, diseases, and certain plants. They consecrated a herb to her, called Belinuncia, in the poisonous sap of which they dipped their arrows, to render them as deadly as those malignant rays

of the moon which were deemed to shed both death and madness upon men.

Mistleto.—In Druidic times the Mistleto was regarded as a divine gift of peculiar sanctity, only to be gathered with befitting ceremonies, on the sixth day, or at latest on the sixth night, of the sixth moon after the winter solstice, when their year commenced. . . . As the Druids attributed to the Mistleto marvellous curative properties, they placed it in water, and distributed this water to those who deserved it to act as a charm against the spells of witches and sorcerers. If any portion of this plant came in contact with the earth, it was considered as ominous of some impending national disaster. The practice of decorating dwellings with Mistleto and Holly is undoubtedly of Druidic origin.

Oak.—The sacred Oak was thought to possess certain magical properties in invoking the spirit of prophecy; hence we find the altars of the Druids were often erected beneath some venerated Oak tree in the sombre recesses of the sacred grove. . . . The ancient Britons dedicated the Oak to Taranis, their god of thunder, and the Celts, under the form of an Oak, are by some authorities stated to have worshipped Baal, the god of fire. . . . The festival of Baal was kept at Yule (Christmas), and on the anniversary the Druids are said to have ordained that every fire should be extinguished, and then relighted with the sacred fire, which, in their sacerdotal character, they always kept burning. In this rite, it is supposed, may be traced the origin of the Yule log, the kindling of which, at Christmas time, is still kept up in England.

Rowan Tree, or Mountain Ash.—The Rowan is generally considered to have been one of the sacred trees of the Druids. Stumps of the Mountain Ash have frequently been found within or near the circle of a Druid temple, thus proving that the tree must have been an object of great veneration with the Druids, who doubtless practised their sacred rites beneath its shade. This connection of the tree with Druidic customs affords some explanation of the many superstitious ideas appertaining to the Mountain Ash which are still extant. Lightfoot tells us that the Rowan tree is discovered in the Druidic circles of North Britain more frequently than any other, and that even now pieces of it are carried about by superstitious people as charms to protect them from witchcraft.

Samolus.—The Samolus was a plant held in high esteem by the Druids. It grew in damp places, and was only to be gathered by a person fasting—without looking behind him—and with his left hand. It was laid in troughs and cisterns where cattle drank, and when bruised was a cure for various distempers.

Selago.—Selago was the name of a herb held in great repute by the Druids, and intimately connected with some of their mysterious rites. It was known as the Golden Herb, or Cloth of Gold, and was reputed to confer the power of understanding the language of birds and beasts. It is variously supposed to have been the Club Moss (Lycopodium Selago), Camphorosma monspeliacum, or a kind of Hedge Hyssop, which used in olden times to be called Gratiola and Dei Gratia, and was regarded as a charm as well as a medicine.

Trefoil.—The Druids thought highly of the Trefoil because its leaf symbolised the three departments of nature—the earth, the sea, and the heaven.

Vervain, or Verbana.—The Druids, both in Gaul and in Britain, regarded the Vervain with the same veneration as the Hindus do the Kusa, or Tulasi, and, like the Magi of the East, they offered sacrifices to the earth before they cut the plant. This ceremony took place in the spring, at about the rising of the Great Dog Star, so that neither the sun nor moon would be at that time above the earth to see the sacred herb cut. It was to be dug up with an iron instrument, and to be waved aloft in the air, the left hand only being used. It was also ordained by the Druidical priests, for those who collected it, that before they take up the herb they bestow upon the ground where it groweth honey with the combs, in token of satisfaction and amends for the wrong and violence done in depriving her of so holy a herb. The leaves, stalks, and flowers were dried separately in the shade, and were used for the bites of serpents infused in wine. Another account states that the Druidesses held Vervain in as great veneration as the Druids did the Mistleto. They were never permitted to touch it. It was to be gathered at midnight, at the full of the moon. *Wm. Wade, Hyndland, Glasgow.*

ENQUIRY.

OLD GARDENING BOOK.

I BELIEVE there is a book, published in the eighteenth century, describing the garden at Hanworth Place, Middlesex, belonging to Sir — Chambers, and subsequently to Lord Vere. I do not know the title of the book, but should be very glad if any reader could give me any particulars. *O. B.*

TRADE NOTE.

MR. GEORGE PAUL'S GOLDEN WEDDING.

To the congratulations already extended to Mr. and Mrs. George Paul, of Cheshunt, on the occasion of their golden wedding on Monday, the 7th inst., we add our own. As a raiser of Roses and an introducer and cultivator of new Lilacs, and other hardy shrubs, Mr. George Paul occupies a high place in the world of horticulture. Many are the friendships he has made and held during a long and busy life; in short, his genial good nature is as well known and highly appreciated as his eminence as a horticulturist. Mr. Paul was chairman of the Hertfordshire County Council in 1908, and has been a Justice of the Peace for that county ever since. We trust that Mr. and Mrs. Paul may long be spared to enjoy health and strength and happiness.

ANSWERS TO CORRESPONDENTS.

ADDRESS. *Correspondent.* The secretary of the American Rose Society is Mr. E. A. White, Ithaca, New York, and the editor of the American Rose Society's Annual is Mr. Horace McFarland, Harrisburg, Pa., U.S.A.

CONTROLLED PRICES FOR APPLES: *H. J. B.* "Jam" Apples are those capable of passing through a ring 2 inches in diameter, and these may be sold only to a licensed jam manufacturer or to a salesman who undertakes to resell them to a licensed jam manufacturer. Cox's Orange Pippin does not come under "jam" Apples but Ribston Pippin does. The controlled prices for Apples other than "jam" Apples were given in *Gard. Chron.*, Sept. 28, p. 134. So far as we are aware the prices of dessert Pears are not controlled.

DISPASSED POTATO. *G. B. B.* The only disease found in the tuber received is the common Potato disease (Phytophthora infestans).

EMPLOYMENT AT KEW. *A. B. C.* Write to The Curator, Royal Gardens, Kew, Surrey, for particulars and form of application for employment. It will save time if you send a brief account of your experience and state what gardens you have been employed in, age and height.

GARDENER'S NOTICE TO LEAVE: *Legal.* It is customary for a head gardener to give or receive a month's notice to conclude service. In the case of an undergardener a week's notice is sufficient on either side. Local conditions may affect the case of a head gardener, i.e., he may or may not be considered a domestic servant, therefore your best plan is to consult a solicitor.

MEALY BUG ON NERINES: *Perplexed.* When mealy bug infests the roots of plants, as in the case of your Nerines, the best method of effecting a clearance of the pest is to turn the plants out of their pots and carefully remove all the soil from the roots. The soil must be burnt to prevent the distribution of the pest, and pots and staging must be thoroughly cleansed. Wash the roots and bulbs in warm and slightly soapy water until every trace of infestation has been removed, taking particular care that the base and neck of each bulb are thoroughly cleaned. When the plants are sufficiently dry for the purpose, repot them in clean compost and use clean pots. Watch the plants carefully, so that any reappearance of the pest may be observed and immediately dealt with by the use of a small brush and an insecticide.

NAMES OF FRUITS: *Rex.* Gravenstein.—*J. P.* Yorkshire Greening.—*J. M. F.* 1, Hoary Morning; 2, Mank's Codlin; 3, Lane's Prince Albert; 5, Bramley's Seedling; 6, Warner's King; 7, probably Chelmsford Wonder; 8, Newton Wonder; 9, King of the Pippins; 4, next week.—*J. O.* 1, Tom Putt; 2, Blue Pearmain; 3, not recognised, probably a local seedling; 4, Hollandbury; 5, Warner's King.

NAMES OF PLANTS: *Daisy.* 1, Cistus monspeliensis; 2, Cassinia fulvida, also known as Diplopappus chrysophyllus; 3, Berberis stenophylla; 4, Salvia azurea; 5, Echinops Ritro var. ruthenicus; 6, Caryopteris Mastacanthus.—*Rex.* The trailing plant is Tropaeolum speciosum; the shrub, Leycesteria formosa.—*Correspondent.* 1, Cardamine sp.; 2, Artemisia lactiflora; 3, Campanula pusilla; 4, Potentilla nepalensis Willmottiae; 5, Helenium autumnale; 6, Phygelius capensis.

SCALE INSECTS ON PEACH TREE: *G. E. T.* In addition to the suggested treatment of the soil, which is likely to produce good results, the trees should be carefully cleansed, as the "brown spots at the bases of the shoots" are scale insects (Lecanium persicae). Spraying the trees, while dormant, and also the walls, with paraffin emulsion or caustic alkali wash is recommended. The paraffin emulsion is made by dissolving 1½ lb. of soft soap in a gallon of boiling water and while still very hot adding 1 gallon of White Rose paraffin; churn the mixture vigorously to obtain an effective emulsion, and gradually add nine more gallons of hot water. On page 159 of the present issue a method of cleansing scale-infested Peach trees under glass is described; it entails more labour but is probably a more effective method than spraying.

SHOT-HOLE FUNGUS ON PEACH LEAVES: *G. B.* The fungous disease which produces the circular holes in Peach leaves is Cercospora circumscissa—the Shot-Hole Fungus. Spray affected trees with an ammoniacal solution of copper carbonate as soon as the leaves expand in Spring and again at intervals. Gather and burn all fallen leaves. One authority recommends spraying with lime-sulphur mixture when the leaves are expanding. This is made by placing 4 lbs. of good quicklime in a barrel, and pouring half a gallon of water on it to start the slaking process; then add 4 lbs. of powdered sulphur, gradually adding more water, and stirring the mixture to prevent caking at the bottom of the barrel, until the lime has been worked into a paste. When the boiling, due to the slaking of the lime, ceases, add sufficient water to make 25 gallons of the mixture, which should be strained previous to use and kept stirred during the process of spraying.

TREATMENT OF OLD ESPALIER PEAR TREES: *D. T.* Take out a trench along one side of the row, fairly close to the trees, and from this starting-point work under the trees and remove a large amount of the marly chalk subsoil. Cut back all stray roots pointing downwards and then fill in with fibrous loam and make all firm. Next year deal with the other side of the row in like manner. Cut out all dead and decaying wood at the end of December or in January, spray the trees with caustic alkali wash.

TOMATOS FOR MARKET SUPPLIES: *T.* Good varieties of Tomatos to cultivate for supplying the market with fruits are Kondine Red, Merivale, Sunrise, and Bide's Recruit.

VOLKAMERIA: *J. W. P.* Volkameria is now sunk under Clerodendron. If you will send us a flowering specimen we will do our best to name the species.

Communications Received.—J. H.—W. S.—S. A.—M. F. W. (Washington)—T. A. O. S.—E. T. E.—N. E. B.—E. M.—S. H.—E. M. F. Denis, Bahamas—G. H. H.—E. B.—J. B.

THE

Gardeners' Chronicle

No. 1661.—SATURDAY, OCTOBER 26, 191

CONTENTS.

ILLUSTRATIONS.

THE LOSS OF THE CLEMATIS IN GARDENS.

BEFORE the Royal Horticultural Society and under its auspices, Mr. Jackman gave a lecture on "Fashions as to the Clematis," in which he supported the practice of grafting the Clematis, which has already cleared the gardens of Europe of the most beautiful of the climbers of the Northern world. In that lecture there was no word said as to the Clematises of Japan and China on their native roots, either in nature or cultivation.

In clearing up this question, the first thing to do is to state a few facts about which there can be no dispute among any who are interested. The first is the extraordinary beauty of the plants. No conservatory or greenhouse in Europe shelters any plant so graceful in habit or so fine in colour of flowers. Added to this is the precious quality of hardiness and power to resist the rainstorms of our Isles. I have grown every obtainable kind in various positions, and never lost a plant from cold. The past summer, so wet day after day in July that my Roses became bags of ugly mould, and even native plants were sickened by the rain day and night, the large Clematises, on their natural roots, suffered not the slightest injury from the storms.

The Loss

The next fact, of which there can be no doubt, is that the gardens of Britain and of France have been robbed of the most beautiful race of climbers of the Northern world. Large gardens, with every advantage of site, soil, and air, are quite bare of them. It is not only in our country this loss has arisen through mistaken ways of increasing the plants. It is so everywhere in France, where we may see in the great nurseries at Orleans and Angers masses of the finest Clematises huddled together in pots, but never a plant on its natural roots. If one asks any question as to the diseases of the plants, only guesses are given. The loss to the trade is great. To suppose that clever propagators could not increase these hardy climbers in the natural way is absurd. The final test of the practice is not in the nursery, but in the grounds of the buyers of the plants. Any practice of increase which drives plants out of general cultivation is a loss to the trade as well as to the planter. From experiments carried on for many years here I have proved that the cause of the loss is the unnatural practice of grafting these plants.

Grafting, Not the Only Cause of Loss

After the grafting, a mistake is made in setting the plants out fully exposed to the sun. The nature of the Clematis in the wild state is to run over bushes and copses, as one may see on the shores of Northern Africa. So if we plant beneath a bush a little shade is afforded, and though the growth is not so free as when the plants are set apart, the life of the plant is longer and the effect is more beautiful. Lastly, more dangerous than the worms and the grubs are slugs, which bark the fragile stems as far up as they can get, and that means the death of the shoot in summer, but not the death of the plant of course on its own roots. Lawn mower, hoe, or rake may smash the delicate stems if the plants are set out singly, especially if grafted, as the union of the hardy variety and the wild stock used is often fragile. Others on the plant on its natural roots never die. Only in sunny days partial losses are by shoots dying off, but other on its own roots do not lose the plant.

The next is the story of my planting and success here by following a completely different way from the common one. It at first struck me that the grafting of plants of different species was not always justified in results. In the nursery practice the rule is to work the Clematis of Japan on the toughest and most vigorous climber of our chalk hills, a wholly different plant and from a different country, and, therefore, there might be a cause of death through the sap arising at different times in the two plants in the spring of the year. The next thing was to test the matter by planting not an easy matter, as in every nursery there were only the grafted plants and like so many others I lost many. At the same time there was a demand in many places that the Indian Mountain Clematis and other wild kinds which are grown on their natural roots are vigorous climbers. The stool ground at which the old nurserymen layered their plants was done away with in favour of the new way of boxing stocks by the thousand with no thought as to the result to the planter.

In only one nursery in France that of the late Ferdinand Lamin, of Bourg la Reine, Seine, a much trusted French nurserymen did I find the stools of Clematis, the little plants simply layered into pots around in the open air. I had many of these, and never failed with them.

At home I often bought batches of plants of the best kinds from nurseries of good repute. On examination they were all found to be grafted on *C. Vitalba* of the Wiltshire and Surrey hills. The roots of every plant were washed out, and the dark roots of the native kind an ugly mass, with above it a few roots of the true plants striving to make way, were found. The latter were carefully saved for planting, and the former with the stock, cut off and thrown away.

I have planted the very finest kinds in every sort of position, some in the hedgerow, round an orchard, in open ground, and in close shade of trees and shrubs, and in spite of the surgical operation of cutting off the stock described above, have had success in all. With the plants from cuttings, layers, or seedlings there is no risk. Is there any sound reason for grafting a plant so easy to raise from layers as the Clematis? There is none, either as to tenderness or difficulty of increase.

Grafting on *Clematis Viticella*.

M. F. Morel, who condemns the use of our common wild kind, uses as a stock *C. Viticella*, which I think is not the best way: the union arising is too fragile. I have had many plants from M. Morel, and hope to have many more, but I have lost some grafted plants, whereas I never lost one of the layered plants.

In dense planting among shrubs any malady is seen but rarely. Many of my plants have borne hundreds of flowers for years, and are, even now, in perfect health. As to Mr. Jackman's repeated statement that the scion absorbs the stock or gets rid of it, anyone who buys a batch from a nursery and takes the trouble to examine the roots will find the two sets of roots in action.

Every season I buy batches of plants and the first thing I do is to take them to a tank and wash out the roots: the "wag" of the native stock is always there.

Soil

It was thought that calcareous soil was cure-all, no doubt arising from the fact that our native species abounds on the chalk hills, but for the Japanese Clematis chalk is not needed. The plants may grow in calcareous soil, but so they do in sandy loam. If anything is helpful in planting a Clematis it is plenty of sharp sand. We never give either mulch or special fertiliser; none is needed.

The Clematis in the Flower Garden.

Having proved beyond a doubt the vigour and beauty of naturally grown plants, my next step was to bring them into the flower garden their right place, though from gardens they are generally excluded. So they were planted on tripods, pergola, wall, and Oak fence as a background to the mixed border, and on almost every surface at hand. And all these places they adorn from early summer to mid autumn.

Increase

In only one nursery, at Richmond, in Surrey, have I recently found some Clematis not grafted, and was glad to find the plants without a vestige of the ugly black wig of the roots of the wild kind. The best way in the nursery of the future is to layer the plant in the stock ground, pegging down the shoots in little pots set around the mother plant. I am writing to my friend Morel, who has raised a number of distinct and lovely forms, to beg him to increase his plants in this way, which gets rid of the fog of guessings about the supposed disease of plants that only ask to be allowed to grow on their own roots.

Miss Willmott tells me she raises Clematis easily from cuttings. From seed of the nobler kinds it is well to raise varieties of merit, though the seed is slow to germinate. The wild species come freely from seed. I sowed the Virgin's Bower (*C. Viticella*) out of hand when forming a new live fence around an orchard, and there it has been ever since, throwing a lace-work of delicate form and flowers over the fence.

There is no more need to graft a Clematis than to graft a Raspberry. It is a short-sighted practice which has driven the loveliest of all hardy climbers from the gardens of Europe. On the contrary, both as to root and branch they are among the most vigorous of hardy climbers. In the loss of Rhododendrons by thousands on the pontieum type on which they were grafted the planter has the satisfaction of seeing the bloom of his favourite for a few years before it gives up the ghost. In the Clematis, even the poor satisfaction is denied him, and in large gardens, with every advantage of soil and climate, they are often unseen. *W. Robinson, Gravetye, Sussex.*

ORCHID NOTES AND GLEANINGS.

NEW HYBRID ODONTOGLOSSUMS.

THREE handsome and distinct hybrid Odontoglossums are sent for recording by Messrs. Armstrong and Brown, Orchidhurst, Tunbridge Wells, who regard them as the best of their many Odontoglossum novelties up to the present.

The flowers of all three are large, of perfect form and fine substance

ODONTOGLOSSUM VIOLET QUEEN.—This variety was raised between O. illustrissimum (Lambeauianum × ardentissimum) × Armstrongiae, and is the most successful attempt to obtain a perfect flower, mainly of a violet tint, with the colour extending to the lip. The broad sepals and petals are clear violet colour with a slight rose shade, a few slight white markings on the tips, and a narrow, clear white margin. The broadly ovate lip is reddish violet, with small spots in the white marginal band. The column is violet colour and the crest of the lip bright yellow.

ODONTOGLOSSUM PERFECTION.—This fine cross between O. crispum Leonard Perfect and O. Amandum (Pescatorei × Wilckeanum) does ample credit to its lineage. The perfectly-shaped flower has a clear white ground, the sepals having two, and the petals one large irregular blotch of light claret-red occupying two thirds of their surface, with a few smaller spots on the white margin of the segments. The labellum has a reddish-claret blotch in front of the yellow crest.

ODONTOGLOSSUM SERBIA. — This handsome hybrid between O. Ossulstonii and O. Aglaon is of fine proportions, the ground white, the inner two-thirds of the sepals and petals having large, confluent, purplish-red blotches, the bases of the petals being white. The reverse of the flower is coloured purple, the colour showing through to the surface at the tips. The colouring of the lip matches the petals, and the whole flower is well balanced.

NOTES ON IRISES.

AN AUTUMN FLOWERING IRIS

THE sketch reproduced in fig. 63 is of an Iris which does not get much attention or praise when it flowers in June, for then it is overshadowed by finer forms of the spuria section. When, however, it sends up its second show of spikes in mid-September, and when each spike has as many as three or four flowers open at once, it is a much more valuable plant

Its real name is exceedingly hard, or indeed impossible, to discover, for it is one of a numerous company of Asiatic relatives of I. spuria, which seem to abound in every brackish marsh from Smyrna to Srinagar. The oldest name appears to be Pallas' halophila, "salt-loving," and others are Gueldenstaedtiana, sogdiana, and desertorum. It is difficult, if not impossible, to distinguish herbarium specimens of the various local forms, and further confusion has been caused by the fact that all seed exceedingly freely. The seeds germinate readily, the plants grow vigorously, and easily oust any more delicate species near which they happen to have sprung up. Anyone who attempts to obtain a collection of Iris species by raising plants from the seeds offered by botanic gardens and Continental seedsmen will find that a large proportion of the most attractive names have been attached to seeds of some form of this Iris.

The individual flowers are not large, for the blade of the fall is only about three-quarters of an inch in width, the whole flower measuring about 3 inches across. The colours vary, but usually consist of more or less faint purple veins on a pale mauve or cream ground, with a central yellow mark on the blade of the falls. One curious form, which was sent to me as sogdiana by Mme. Fedtschenko, has flowers of a peculiar shade of mauve-purple, which could only be matched among the pallidas, if, indeed, the exact tone ever comes even then.

The seeds of this Iris are curious, and well adapted to the marshy habitat in which it grows in the wild state, for each is enveloped in a

FIG. 63.—IRIS SPURIA VAR. HALOPHILA: ONE-THIRD NATURAL SIZE

loose, but airtight, parchment-like covering, which enables it to float in water. On the surface it is either carried along by any current or blown by the wind until it strands on some bank, where it has more chance of germinating and growing into a plant than if it lacked this covering and sank to the bottom of the water, where the young plant would probably be drowned, even if the seed succeeded in germinating at all.

IRIS ROSENBACHIANA.

THERE seems to be no doubt that, as was suggested in an article in these columns some months ago, two distinct species are really concealed under the name of Iris Rosenbachiana. It was suggested that the two species could be separated by certain characteristics, visible in the dry bulbs, and the sketch reproduced in fig. 64 is an attempt to show bulbs of the two species. That on the right is slightly larger; the fleshy roots taper gradually and their colour is a light brown. On the contrary, the bulb on the left has roots which taper more abruptly, and they are always whiter in colour. It seems probable that the bulb on the right is that of the true I. Rosenbachiana. It flowers a fortnight to a month earlier than the other species when the bulbs are grown together under the same conditions. So far as my experience goes, the flowers of this early-flowering species are always white, with crimson or reddish-purple markings and a conspicuous golden crest, whereas those of the other species are very various in colour, usually of some shade of blue- or red-purple, but occasionally even of a pale yellow with faint purple veins. There is one difference in the flowers which seems to be constant, and that is, that the pollen of the early-flowering form is always yellow, while that of the other is always white.

In her account of the Irises of Turkestan in the *Journal Russe de Botanique*, 1909, No. 5, p. 77, Mme. Fedtschenko says of I. Rosenbachiana: "Flowers large, of various and beautiful colour," and of I. baldshuanica: "Flowers smaller, yellow." This is barely a satisfactory diagnosis of the two species, and it is probable that some of the plants which she took to be Rosenbachiana should really be class[ed] as specimens of baldshuanica. It is not yet certain whether these two plants breed true when raised from seed, and it is therefore impossible to say at present whether we must consider them as two good and distinct species or merely as local forms of the same species. In the meanwhile it may be useful, at any rate for gardening purposes, to say that I. baldshuanica differs from I. Rosenbachiana in being slightly smaller and flowering later, in having white and not yellow pollen, and in having fleshy roots to the bulbs, which taper abruptly and not gradually.

Both these Irises are easy to raise from seed, which should be sown in the late summer or early autumn. By the end of the first year the small bulbs will have no persistent rootlets, but resemble that illustrated at (a) in the sketch. If the soil in the seed-pots is made sufficiently rich, the small bulbs may be left in them until the end of their second year, when they will be found to have developed a root almost as large as, and in some cases even larger than, themselves. Such an example is illustrated at (b) in the sketch. At the end of the second year the small bulbs should be planted out in a sheltered sunny corner, or preferably in a cold frame, and by the end of the third year will have assumed the appearance of that marked (c) in the sketch. A year, or at most two years, later the bulbs will begin to flower and, although in most cases propagation by offsets from bulbs is slow, it will be found that some individuals seem to increase fairly rapidly by this means. A strong bulb is capable of throwing up three or even four flowers in succession, so that the display lasts for a considerable time. *W. R. Dykes, Charterhouse, Godalming.*

Allington Pippin Apples at £280 per Ton.—From Mr G. W. LEAK we learn that Messrs. R. H. BATH, LTD., Wisbech, recently sold a ton of Allington Pippin Apples for £280. These were fine specimens, purchased by a buyer for a North of England co-operative society, who offered the price quoted, i.e., 2s. 6d. per lb. for one ton.

ON INCREASED FOOD PRODUCTION.

POTATO YIELDS

The heaviest yield of Potatos from 1 lb. of seed in a competition at Sutton St. Barnabas, Surrey, was 518 lbs. Every precaution was taken to guard against error and to ensure equal opportunities to the competitors. The sets, which were from Ireland, were graded so that each competitor received 15 tubers. A member of the committee was present at the planting and lifting. When dug each crop was placed in a bag and sealed. The name of the variety was not known to the competitors. Last year the first prize crop in a similar competition weighed 360 lbs. *J. C. B.*

The Barrhead and District plotholders held a competition for the heaviest yield from 1 lb. of seed Potatos limited to 12 sets. The variety was Majestic. Two competitors, working side by side, lifted 35 lbs. and 36 lbs. respectively. Each had one plant that failed, so that there were 22 roots between them. When washed and dried the total weight of these 22 roots was 160½ lbs. The heaviest Potato weighed 2 lbs., the 12 heaviest 18 lbs. 13 oz. There were 304 lbs. weighing 1 lb. or over, 63½ lbs. from ½ lb. to 1 lb., and only 16 lbs. of Potatos weighing less than ½ lb. Of these, 12 lbs. were small. *J. C. Roberts, Hon. President, Barrhead and District Plotholders' Association.*

I was present on September 18 at the lifting of the trial Potatos grown by Mr. E. H. Bartram, Parc Newydd, Abercynon, Glamorgan, for the Board of Agriculture. The results were as follow:

	Roots	Total crop lifted
Edzell Blue	30	160 lbs.
The Ally	15	155½ lbs.
Great Scott	30	227 lbs.
Mr. Bresee	15	118 lbs.
Lochar	30	191 lbs.
Templar	30	147½ lbs.
Tinwald Perfection	30	162½ lbs.
Dominion	30	123½ lbs.
Kerr's Pink	15	123½ lbs.
Majestic	30	216½ lbs.
Golden Wonder	30	159½ lbs.

The seed tubers were planted on April 19, 1918, and lifted on September 18. Three and a half pounds were planted to provide 30 roots. One root of The Ally variety yielded 100 tubers in all, with a total weight of 18lbs. *John Parker, Glamorgan County Horticultural Demonstrator, Pontypridd.*

From one root of Satisfaction I obtained three Potatos weighing respectively 2 lbs. 11 oz., 1 lb. 15 oz., and 1 lb. 1 oz. *J. M. Bloor, Derby.*

THE POTATO CROP

In most districts the earlier varieties of Potatos were very satisfactory, and the tubers were but little affected with disease; but on some soils, owing to a long period of dry weather, the crop was not so heavy as was at one time expected. It is interesting to notice the appearance of Potatos cultivated for the first time on newly turned up pasture in contrast with those grown for the second time on similar ground. Seldom as one is able to judge, where the land was properly prepared, and Scotch or Irish seed planted, there is very little to choose between the crops, and heavy yields should be looked for.

There are still many Potatos in the ground, as the weather has not been favourable for lifting them. It will be wise to lift and store the tubers whilst they are still in good condition. When dug breadths are small, hand-digging will take too long, and the tubers should either be ploughed out or lifted with a Potato digger, of which there are several types on the market. Plenty of hands should be employed for following the machine for the purpose of picking up the crop, but care should be taken not to include any that are blighted, and the "chats" should be picked up separately for pig feeding purposes, as, owing to the prevailing scarcity of animal food, these are sure to be in great demand, and will realise good prices.

There is no better method of keeping "ware" Potatos than by pitting or clamping them, providing it is properly done. Select a high, dry piece of ground and elevate the base above the level of the surroundings. Use a little dry straw for placing the tubers on, build the clamp ridge shaped, in a workmanlike manner, and sprinkle a little slaked lime between the layers of tubers. Lime has a sweetening influence, prevents any diseased tubers contaminating the rest, and generally improves the quality. Put a good layer of straw on either side of the ridge, after which a little soil should be placed thereon; at frequent intervals bring through some tufts of straw for ventilating purposes on either side of the ridge but not along the centre, as is so frequently done. Later, more soil should be placed on the clamp sufficient to ward off severe frosts, and at all times it may sometimes be necessary, even when it is desirable, to place one sort of covering over the whole during long periods of frosty weather.

Resistant Sovereign has proved to be one of the very best, and a good late and fair cropper. It is a great cropper, perfect in shape, quite free from disease, and, above all, the quality is of the best. It much resembles the old Snowdrop in appearance, but, as is well known, that variety was very prone to become attacked by late blight.

Other good varieties that have done well in this district are Midlothian Early, Sharpe's Express, King Edward, Scottish Farmer, Iron Duke, Great Scott, President, Arran Chief, and British Queen.

The illustration in fig. 65 shows part of 30 rows of Potatos in the park at Aldenham House, Elstree, this being the second season the park has been cropped with Potatos. *Edwin Beckett.*

IMPORTANCE OF PHOSPHATES FOR POTATOS

I have long been of opinion that the low-lying portions of the land in the neighbourhood of Bath are deficient in available phosphates, and further experience has confirmed my belief. On these lands it does not appear to be so, for good fruit is produced on comparatively slender growth where the trees are well cared for, and Potatos also are of good quality without over-luxuriant haulms.

A low lying plot taken in hand in March, 1917, was in rather poor condition, and suspected of being short of humus, phosphates and lime. As a nitrogenous manure was necessary, it was not advisable to apply caustic lime at the same time, therefore gypsum was applied and as no superphosphate was to be had, it being too late to

Fig. 64. Bulbs of Iris fosteriana, eight to the left, at first year; in second year; third year seedlings (see p. 164).

Fig. 65. Potatos grown as in the park at Aldenham House, Elstree.

apply basic slag, steamed bone-flour was used, and as much wood-ash and burned vegetable matter as could be had. The Potatos were planted in trenches, and stable manure which was already partly decomposed was mixed with the soil between the trenches, so that it could be used for earthing-up without much of it coming in direct contact with the young growths, and none of it would touch the seed tubers. A fair crop was produced, but the quality was indifferent, and the haulms were much too vigorous, many of them being 6 feet in length.

In the spring of this year Potatos were not planted on the same ground, but on that which had been manured for other crops the year before, and to which another application of lime was given in the autumn. No manure whatever had been applied to this plot since the spring of the previous year, and none was given at the time the Potatos were planted, with the exception of a little soot to ward off insect pests, and wood ash. No phosphatic manure was wanted, because steamed bone flour was applied the previous year.

The seed tubers, which were not in the best condition, were planted in trenches 3 to 3½ feet apart, and 15 to 18 inches asunder in the rows. The early part of the season was very dry, and Potatos, as well as other vegetables, suffered from drought, but these, being planted in trenches and earthed up deeply, suffered very little. They yielded a good, clean crop: the variety Gordon Castle gave an average of 6 lbs. to the root: one root produced 8 lbs. 5 oz., and many 7 lbs. and over. The quality also was good. This was very satisfactory, but as steamed bone-flour is now out of the question, having trebled in price within a few years, basic slag will be applied this autumn. The seed tubers will be selected and carefully tended. They will not be planted on the same ground, but on that which was manured for another crop last spring. An acre of Potatos planted 15 inches apart in the row, with 3 feet between the rows, would require 11,520 sets, and these, yielding 6 lbs. each, would give a total crop of 30 tons 17 cwt. 16 lbs.

On land adjoining the forementioned, which was not treated to phosphatic manure, but had a good dressing of wood ash, and was planted with the same varieties, from the same source, the crop was not a heavy one, and many of the tubers were small.

Besides the lesson in phosphatic manuring, the foregoing experiment shows the folly of planting too closely.

When basic slag cannot be applied in the autumn or early winter, superphosphate should be used at planting-time, and, if the soil is not deficient in lime, another dressing may be given at the final earthing-up.

I know a spot not far away where Potatos have been grown successfully on the same ground without change of seed for half a century. *Wm. Taylor.*

FOOD PRODUCTION AT LETCHWORTH.

Several thousand Belgians are employed in the large munition works at Letchworth Garden City, most of them being invalided soldiers and members of the professional classes who, being unable to follow their ordinary vocations, took up this important national work.

When the need for increased food production became evident, a big allotment scheme was started in the district, and a lecturer was appointed by the Belgian Board of Agriculture.

The results of the combined efforts of growers and instructor, aided by the directors of Messrs. Kryn and Lahy Metal Works and the Belgian Board of Agriculture, have been encouraging. A garden produce competition was held on September 29 by the four hundred members of the Belgian Gardening Club, this being the second year in which a show has been held by the club. The exhibition revealed the important contribution made to the food supply by these munition workers, in spite of their working long hours on heavy tasks. *E. B.*

The Week's Work.

THE ORCHID HOUSES.

By J. Collier, Gardener to Sir Jeremiah Colman, Bart., Gatton Park, Reigate.

Vanda. — Towards the end of the present month Vandas of the tricolor and sanvis section will commence to root freely, and any necessary repotting is best done at this period. Specimens that are well furnished with leaves and with roots in good condition should not be subjected to much root disturbance unless a larger receptacle is needed, but some of the old materials may be removed from the surface and replaced with fresh. Plants that have become leggy through losing a quantity of their bottom leaves, and are provided with plenty of live roots up the stem, should be removed from the pots and as much of lower part cut away as will bring the lowest pair of leaves, when the plant is again placed in the pot, almost down to the rim. After severing the stem place the plant in the centre of the receptacle, with a few flat crocks over the bottom. Cover the crocks with a layer of clean Sphagnum-moss, over which spread the roots, and carefully work in amongst them some clean crocks and Sphagnum-moss, then distribute more roots in a similar way until the rim is reached, finishing with a surface of clean, picked Sphagnum-moss. In turning the plants out of the receptacles it will be found that some of the roots will cling to the sides, and care must be taken not to damage them. Each growth should be tied to neat stakes to keep the plants firm and upright. The bottom aerial roots should be pegged to the moss, while those higher up the stem should be directed downwards to the compost. Shade the plants from sunshine, and keep their immediate surroundings moist by syringing frequently around and between them. The plants will not require water for a few days after they are potted, but later, as often as the surface moss becomes dry, it should be sprinkled with water in order to keep it green and healthy. These Vandas grow well in the intermediate house or the cooler end of the Cattleya house. They are subject to the attacks of a small brown scale insect, that attaches itself firmly to the leaves; great care is necessary in destroying the pest or the leaves may be permanently injured. Vanda Kimballiana and V. Watsoni are developing their flower-spikes, and the atmosphere should be kept rather drier and warmer than hitherto, but give sufficient water to keep the Sphagnum-moss growing. Less moisture will be needed after the flowers are expanded.

Oncidium.—Such Oncidiums as O. varicosum, O. Forbesii, and O. crispum, are now developing their flower-spikes and must not be allowed to suffer from drought at their roots, or the flower-buds may turn yellow and drop. These species produce strong, branching inflorescences, therefore only robust, well-rooted specimens should be allowed to flower. Weakly plants should have the flower spikes removed as soon as they appear, and be given every encouragement to grow vigorously. In no case should the flower spikes be allowed to remain on the plants after the pseudo-bulbs begin to show the least signs of shrivelling. O. concolor will have finished its season's growth, and requires less water at the roots, but it must not be allowed to become quite dry at any time. O. Papilio and O. P. Krameri anum, which produce a succession of flowers from their slender stems, should not be allowed to become dry at the roots, and the flower stems should be removed after three or four flowers have developed. These interesting plants grow well in shallow Teak wood baskets suspended in a light position in the warmest part of the Cattleya house.

Cymbidium.—Plants of Cymbidium insigne, C. Lowianum, C. Tracyanum, and the many hybrids that are now sending up flower spikes should be well supplied with water at the roots, whilst others that are more backward in this respect should be kept rather dry, otherwise new growth will commence and the plants fail to bloom. C. grandiflorum has finished its growth, and flower-spikes will soon be appearing from the pseudo-bulbs made the previous year. To ensure success in flowering this species, the plants should be grown in a cool, light position, and their roots kept somewhat dry during the winter. C. eburneum should be grown in a less exposed part of the house, and, as plants of this species have only small pseudo-bulbs, they should not be allowed to become quite dry at the roots.

Disa.—The present is a suitable time to commence the repotting of Disas, but repotting is only necessary about every second year. The first to need attention will be D. Luna and some other hybrids, whilst the brilliant D. grandiflora may receive attention at a little later period. Ordinary flower-pots or rather deep pans form the best receptacles, and for well-rooted specimens these should be at least two sizes larger than those the plants now occupy, so that very little root disturbance will be necessary. Good drainage is essential. The rooting material may consist of good fibrous loam, Sphagnum-moss, and a little peat, with a fair sprinkling of crushed crocks and coarse silver sand. The compost should be pressed moderately firm, and the receptacle filled to just below the rim. With the last layer of soil a few living heads of Sphagnum-moss should be incorporated, to help keep the roots in a moist condition. Disas should not be allowed to suffer from drought at any time, as they have no decided season of rest. Place them in the coolest and shadiest part of the Odontoglossum house, near a ventilator, where they may receive fresh air at all seasons. When vaporising the house, remove Disas to another structure until the fumes have escaped, or the leaves will become disfigured. Specimens that are pot-bound may be divided and made up afresh: arrange together portions of uniform size, the object being to have all the plants in the one pan in flower at the same time. One watering should be given to settle the compost, and for some time to come spraying once or twice each day will be sufficient to keep them moist. The plants should be sprayed overhead occasionally with a liquid insecticide, in order to ward off attacks of thrips.

THE HARDY FRUIT GARDEN.

By Jas. Hudson, Head Gardener at Gunnersbury House, Acton, W.

Late Peaches and Nectarines.—The fruits of late Peaches and Nectarines, with but few exceptions, will now have been gathered. Any attention needed should be given the trees, and if the borders are in need of renewal, let the work be done as soon as possible. Follow the directions given for the earlier varieties, and thin out the wood rather more than for the latter. If a good top-dressing of fresh soil is all that is considered needful, let that be applied before inclement weather arrives. Where shortage of labour precludes even this procedure, apply a very moderate top-dressing of an artificial compound, in which phosphates combined with potash predominate. Such a compound can be easily chosen if the percentages issued by the makers are considered. Lightly fork the manure into the surface soil; it will soon be carried lower down by the rains. If possible, do not crop these borders after they have been in any way treated, but rather let them be left vacant during the coming winter.

Planting Young Trees.—Planting should be done immediately the trees arrive from the nursery. Do not lay them in with the view of postponing the work for a few more weeks, as this is a dangerous practice, but if they arrive at the end of the week, this must be done. Before planting, examine the roots, and remove any sappy ones that point in a downward direction. Place a few roofing slates under the roots to further prevent this tendency. Plant in good, fresh soil, without the addition of animal manure. Remove injured roots, and thin out very sappy growths, but do not otherwise prune, but rather leave this work to be done in spring.

Root-Pruning and Planting Apricot Trees.—In many instances it may be found expedient to root-prune Apricot trees if they are growing too freely. I know a case where a good practical gardener had greater success when he partially lifted his trees every second autumn. These were

trees with plenty of vigour. If root pruning were generally adopted, it might I think be the means of preserving the trees. Use a liberal amount of old mortar rubble when filling in the soil and do not employ animal manures. When planting young trees provide good drainage by means of old brick rubble, with the mortar still adhering. Let this be a foot thick at the least, and ram the soil firmly as the work proceeds. The border should be somewhat higher than the level of the surrounding soil, so that it does not receive an undue amount of rainfall. It should be borne in mind that Apricots in their native habitat have to go through a long period of drought and endure extremes of heat and cold. I feel convinced that if we protected the soil in which Apricot trees are grown in such a way as to throw off the winter rains it would be all the better for the trees. Apricots in this country flower too early for their well being.

FRUITS UNDER GLASS

By W. J. GUISE, Gardener to Mrs. DEMPSTER, Keele Hall, Newcastle, Staffordshire

Fruit Trees in Pots.—The shoots of trees now in the open which were repotted or top-dressed as advised in the CHRONICLE of August 10, should now be thoroughly ripened. Preparations must be made to protect the pots from frost. If they are standing on a dry base in a sheltered site, they may be protected where they stand. Plunging the pots over their rims in ashes, leaves, litter, or Bracken will carry them safely through severe weather. When so doing the pots care must be taken that the plants do not suffer from lack of moisture at the roots, especially during a long period of rainless weather. When fruit trees in pots cast their buds in the spring the cause can generally be traced to dryness at the roots in winter. Keep the pots well covered and the roots moist and there will be no trouble in this respect. At a later period, when every leaf has fallen, the trees should be carefully washed with strong soapy water.

Successional Trees in Pots. No time should be lost in completing the work of rooting late trees. In many cases, by carefully reducing the ball of soil and roots, it may be placed in a clean, dry pot of the same size as before; this will allow room for nearly three inches of fresh compost to be worked down to the base. All the young fibrous roots should be carefully preserved and the strongest roots shortened. Cover the clean crocks a few inches deep with the more fibrous parts of the compost and make it quite firm with the rammer. Hard ramming is most essential when repotting fruit trees, as this not only encourages the roots to make new fibres, but prevents water from passing away without wetting the whole of the soil. Strong, fibrous loam, old lime rubble, bone meal, burnt garden refuse and soot, with a small portion of decomposed manure if the loam is poor, will form an excellent compost for fruit trees of all kinds.

Top-Dressing Trees in Pots. For trees that only need top-dressing it will suffice to correct the drainage, remove the old surface soil to a depth of 3 or 4 inches, and replace with a slightly richer compost. Give all newly potted and top-dressed trees one good watering, and, if possible, place them in a cold house for a few weeks before finally plunging them outside, otherwise, during a long spell of wet weather they will remain in a saturated condition, which greatly retards root development.

Young Trees. It may be necessary to introduce a few maiden Apple, Pear, Plum, Cherry, Peach and Nectarine trees to grow on ready to replace those showing signs of exhaustion. All these readily respond to cool house treatment, and now is a suitable time to obtain the trees from a nursery, if there is no reserve stock. Directly they arrive, prune the trees into shape and after shortening back all strong or injured roots they should be placed in clean, well drained pots varying in size from 9 to 11 inches. The compost should be in a friable condition, and the firmer it is rammed the better. When potting is completed, plunge the pots deeply in leaves or Bracken, in a sheltered position outside.

THE KITCHEN GARDEN.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

Asparagus.—As soon as the foliage dies cut the stems off to within a few inches of the ground and carefully clear the beds of all weeds. Where the soil is of a light, sandy nature and well drained, autumn mulching may be safely and probably advantageously practised. The beds should be top-dressed with half-rotted manure, and sufficient soil thrown out of the alleys to lightly cover the manure. On naturally heavy soil of a very retentive character, the common practice of mulching should not be done. It is not frost alone, but an excess of moisture, or perhaps the two evils combined, that causes the loss of many of the crowns. To guard against this trouble as much as possible lightly clear the beds of weeds, and top-dress it with some light material. Much of the rain will then run off the bed, which will be drier and warmer in consequence. The manure may be applied next spring. This treatment applies more especially to beds on the level, but even on raised beds mulching may safely be delayed until the spring.

Celery. Take advantage of dry weather to earth up late Celery as the plants complete their growth, following the directions given in previous numbers.

Forcing Rhubarb. Lift a few strong roots of suitable varieties which have been exposed with well ripened crowns, leaving them fully exposed a few weeks before placing them in 55° to 60° warmth. A Mushroom house or similar structure which can be kept darkened, and with heat and moisture, will ensure supplies of forced Rhubarb by Christmas.

Endive. After this date no more of the roughly blanched Endive is only slightly inferior to it, if any, in point of crispness and flavour. Only those who have to supply salads daily throughout the year can fully appreciate the value of a good supply of Endive. The hotter and more strongly they are grown the more liable are the plants to be spoiled by frosts. Protection should therefore be afforded them either by frames or letting them and placing them in a cool house secure from frosts. Blanching should not be commenced until the leaves are nearly or fully grown, the number of plants being prepared at weekly intervals according to requirements. If blanching is commenced too soon it stops the growth of the plants, moreover, Endive keeps badly after it is blanched. Inverted pots with the drainage holes covered to exclude the light offer a quick and ready way of blanching Endive and also protects the plants. Probably the best Endive is obtained by placing strong plants in a warm Mushroom house in small batches and keeping them well supplied with moisture without direct overhead watering.

PLANTS UNDER GLASS.

By E. HARRISS, Gardener to Lady WANTAGE, Lockinge Park, Berkshire

Plants for Forcing. It is important that plants which are to be forced into flower early should be well matured. Lilacs, Prunus, Pyrenses, Wistarias and Deutzias which have been planted in the open should be dug up and placed in pots of suitable size. Ordinary soil is suitable for these plants. Specimens grown in pots and not needed for early forcing should be plunged up to their rims in ashes as a precaution against frost.

Roses in Pots.—If a suitable house can be found for the cultivation of Roses in pots, a few should be certainly grown, as no flowers are more appreciated than Roses at any time of year. No time should be lost in securing plants for this purpose, for the earlier they are potted the better. A suitable compost may be made by mixing good fibrous loam with cow manure, crushed brick rubble, and a little bone meal or crushed bones. Before potting the plants, cut back the stronger roots, but preserve all the fibrous roots. Roses suitable for pot culture are Madame Abel Chatenay, Mrs. J. Laing, Lady Hillingdon, Liberty, Richmond, and Sunburst. Among the climbing varieties, Dorothy Perkins, Minnehaha, Blush Rambler, Paul's Scarlet Rambler, and Electra will be found suitable for cultivation in pots, and they are most suitable for conservatory or house decoration. When potted, they should be plunged in ashes as a safeguard against frost.

Climbing Roses.—If the final thinning of the young growth has not been done, this work should be no longer delayed. Some varieties, such as Fortune's Yellow, usually develop a great deal of lateral growth. This must be cut back to two or three buds. Give abundance of air on all favourable occasions, but do not permit cold draughts, as these will cause mildew to develop on the foliage. As a precaution against this disease the plants should be dusted occasionally with sulphur. The roots of climbing Roses must not be allowed to suffer for lack of water, and old established plants may still be given some form of stimulant.

Freesia.—If Freesias were potted early, they will now be well rooted, and a few pots may be placed on a shelf near the glass in a warm house. As growth advances the roots may be given an occasional watering with weak soot water. The main batch of Freesias must be kept growing under absolutely cool conditions, using fire heat only to keep out frost. The shoots should be supported to neat stakes before there is danger of them breaking.

Schizanthus. Pot on seedling Schizanthuses in 6 inch pots as they become large enough. The earliest plants should be shifted into larger pots; a compost of fibrous loam, leaf soil, a little manure from a spent Mushroom bed, and sharp sand will be suitable for them. Arrange the plants on a cool base near the roof glass, and keep them growing in cool conditions at all times.

THE FLOWER GARDEN.

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

Planting Bulbs. Where there is a superfluous number of bulbs which may, with advantage, be thinned, the present is a suitable time to make fresh plantations on grass and elsewhere. Fritillarias are very choice flowers, and the old red Crown Imperial arranged near a background of dark foliaged shrubs is splendidly beautiful. Scillas, too, are charming spring flowers, one of the choicest being S. italica, which does well in grass. The Muscaris are rather inclined to the out, but the common M. botryoides increases so rapidly that there is always enough to spare to make good any failures. It is a great help to established colonies to surface dress the plants with a compost of well rotted manure and rich soil.

Spring-Flowering Plants. The flower beds should be filled with spring flowering plants directly they are cleared of the summer occupants. There is no need to make great preparations, and were it not that forking the soil gets rid of much unsightly material, bulbs, Wallflowers, and similar plants might be planted without any preparation at all, any fertilising material needed being added as a surface dressing in February. Firm soil is drier and less liable to frost eruption than that which is loose, and on that account alone the ground should be well firmed as planting is proceeded with.

Pelargoniums. It will be almost impossible to winter cuttings of Pelargoniums without the use of fire heat, but old plants may be lifted and saved and the stock by this means preserved. The method consists in partially disrooting the plants after lifting, denuding them of foliage and keeping them quite dry until the spring, when they may be started into growth either in boxes or pots. They make remarkably fibrous plants, far more so than autumn struck cuttings do. During the period of rest dryness is essential, no moisture, and, of course, a temperature never near freezing point. Where there are means of keeping rooted cuttings a very low temperature is suitable, provided the soil in the pots or boxes is kept dry.

EDITORIAL NOTICE.

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

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

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

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 47.3°

ACTUAL TEMPERATURE:—

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, *Wednesday*, October 23, 10 a.m.: Bar. 30.1; temp. 52°. Weather: Slight fog.

A Chamber of Horticulture.

The need for an organisation in which the whole interests of the horticultural industry and profession are focussed has long been urged by the more enlightened members of the trade, and steps which have recently been taken give promise of the formation of such a central body, which will be known as the Chamber of Horticulture. Prosperous pre-war conditions did not seem to call so urgently for this focussing of interests, but the war has brought many troubles to horticulturists as to members of other trades, and with the passing of the Defence of the Realm Act, the Corn Production Bill, and other controlling measures the need for a central horticultural body has become increasingly pressing. The horticultural trade has discovered its inability to offer effective objection to or provide strong defence against impending controlling measures likely to press hardly upon it. On the contrary, this lack of focussed co-operation made the work of the Horticultural Division of the Food Production Department extremely difficult, as those in charge found no central body to whom they could appeal for statistical information to help them in the difficult circumstances that arose continually; consequently horticulture failed to secure for itself the recognition its great and far-reaching activities deserved. Happily, this reproach promises to be removed in the near future by the establishment of a Chamber of Horticulture. This endeavour, due chiefly to the initiative of Mr. H. Morgan Veitch and Mr. George Monro, jun., will have the warmest support of all who desire the advancement of horticulture. Already the scheme has promise of powerful support from prominent men in the trade, including market growers, fruit growers, flower growers, and seed merchants. A short while ago members of the horticultural trade were invited to meet at Donington House, Norfolk Street, Strand, London, for the purpose of considering the advisability of forming a Chamber of Horticulture. They decided in favour of its establishment, and appointed a sub-committee to draft Rules and Articles of Association, select and recommend a whole-time secretary, and endeavour to find suitable offices in or near Covent Garden. The preliminary work occupied a large amount of time at many meetings, but on Friday, the 18th inst., the work had proceeded sufficiently to enable the sub-committee to place its recommendations before the larger body by whom it was appointed. Unfortunately, the Rules and Articles of Association could not be placed before this meeting, as they were still in counsel's hands. In due course they will be published in the horticultural Press, so that they may be thoroughly considered and criticised before they are submitted to a mass meeting of traders to be duly advertised and held in London. Both Mr. Monro, jun., and Mr. Morgan Veitch outlined the aims and objects of the Chamber, and insisted that the work now carried on by horticultural trade societies, associations, and federations would be as necessary as ever, and the Chamber will not interfere with their activities in any way, but encourage and help them. The Chamber will be the direct means of communication between Parliament, Government Departments, and railway companies, and the horticultural trade as a whole. It will be representative in the highest degree by means of delegates from associated trade societies and private members, by whom the executive council of thirty-six members and the trade committees will be elected. Dr. Keeble, of the Food Production Department, and Mr. A. G. Rogers, of the Board of Agriculture, were present at the recent meeting, and the latter considered the compilation of statistics relating to horticulture should be almost the first business of the Chamber. Dr. Keeble said it was high time the public understood the difference between horticulture and agriculture, and a Chamber of Horticulture would be the means of making the distinction widely known by showing the national importance of the horticultural industry. At present, he said, there were no statistics to indicate that importance, consequently the difficulties in the way of making Government Departments understand the extent of this industry and the money invested in it were very great. He believed proper statistical information from various branches of the trade, collected by the Chamber, would prove beyond all question the immensity and national importance of horticultural activities. His own work in relation to Food Production would have been greatly simplified had such information been ready to hand. Both Dr. Keeble and Mr. Rogers made a strong point of the fact that Government Departments were not antagonistic; those in charge needed all the assistance the trade could afford, and desired to give as much information and help as possible. Dr. Keeble heartily supported the formation of the Chamber of Horticulture, suggested the appointment of corresponding members, and urged the Chamber to undertake experimental inquiries, particularly in connection with mechanical cultivation, and incidentally remarked that the Council of Industrial Research might be expected to contribute towards the conduct of experimental work carried out on the right lines. Mr. Agar, Renter Warden of the Gardeners' Company, expressed hearty approval of the new movement. Alderman Moore, the Master of the Fruiterers' Company, was appointed hon. treasurer of the Chamber, and Mr. R. Wynne secretary, appointments which Mr. A. J. Monro (with a happy play upon the words "win" and "more") considered a happy augury for the future. With the establishment of a Chamber of Horticulture it is proposed to acquire a building wherein all horticultural trade organisations, including the parent body, will find suitable office accommodation. The financial prospects of the Chamber are excellent, provided the trade associations attach themselves and contribute their quota, and that more private members are forthcoming. Already, thanks to Messrs. Geo. Monro, jun., J. T. Poupart, J. Rochford, Alfred Watkins, W. G. Lobjoit, G. Shawyer, H. O. Larsen, W. Seabrook, R. Robbins, and F. Ladds, an income of nearly £1,000 a year for five years has been assured.

"Daily Mirror" Potato Competition.—Following a series of local competitions held throughout the country the final competition for the prizes offered by the *Daily Mirror* for the best dishes of five Potatos was held at the Memorial Hall, Farringdon Street, London, on Wednesday, the 16th inst. More than one thousand dishes of excellent Potatos were exhibited, and the premier award of £500 was won by Mr. F. J. BREACH, Eastbourne, with five wonderfully fine specimens of Up-to-Date. The other leading prizewinners were Messrs. F. F. BUTCHER, Ashford, Kent (£100); JOSEPH DAY, Berkhamsted (£50); R. W. BASTOCK, Warwick (£25); G. H. GORDON, Lincoln (£10), and, in addition, thirteen competitors secured prizes of £5 each. The exhibition was opened by Mr. CLYNES, of the Ministry of Food, and Dr. KEEBLE and Major BELCHER were also present at the opening ceremony. The generally expressed opinion was that the competition had been the means of encouraging and extending the cultivation of Potatos and thereby increasing the supply of a most important article of food.

Hops.—The preliminary statement of the Board of Agriculture on the produce of Hops shows that the amount of Hops produced in 1918 is 130,272 cwts., compared with 220,719 cwts. in 1917, whilst the acreage is 15,666 and 16,946 respectively. The total production of Hops this year is about two-fifths of the average production of the past ten years, on an area which has been reduced to less than half the pre-war average. The yield per acre (8.32 cwts.), while 4⅞ cwts. less than last year, is, however, only 1⅞ cwt. short of the average.

The Canadian Fruit Crops.—According to the *Board of Trade Journal* the official fruit crop report for September places the Nova Scotia Apple yield at 400,000 barrels, or slightly more than half of last year's production. The embargo on Apple exports to Great Britain, the report states, is discouraging to Nova Scotia growers, but the orchards are being kept in good condition. Conditions in Quebec Province are described as "lamentable," because of the destruction last winter of old Fameuse orchards. The hope is expressed that the farmers will replant these orchards. In Eastern Ontario there

is a medium crop of certain varieties of Apples. There is also a fair crop in Central Ontario, but the quality is below the average. In Western Ontario, autumn varieties are one half a crop, and winter varieties 35 per cent. There is a fairly good crop in the Georgian Bay district. Earlier reports on the Niagara peninsula Peach crop are confirmed by the September report. The total yield will be slightly less than in 1917, and probably not more than 40 to 50 per cent. of an average crop. The Apple crop in the inland valleys of British Columbia will average about 10 per cent. less than in 1917, but is of better quality and size. Pears are a very large crop, at least 50 per cent. larger than last year, while Plums and Prunes also show a big increase.

Richardias.—The four best species of Richardia are R. africana (syn. æthiopica), R. Elliottiana, R. Pentlandii, and R. Rehmannii, all of which are illustrated in fig. 66. The first-named is by far the most popular in this country, being largely grown by market gardeners and in gardens generally as a decorative plant for the conservatory. R. Elliottiana and R. Pentlandii, the yellow Arums, are more tropical in their requirements and more Caladium-like in their behaviour under cultivation. They are therefore less easy to manage, yet there are few more beautiful Aroids than a well-grown example of either. They are often wrongly named in gardens, though they are readily distinguished, R. Elliottiana having spotted leaves and wholly yellow spathes, whilst in R. Pentlandii the leaves are not spotted and the spathes are dark purple at the base. They differ from R. africana in being deciduous, their resting period being marked by the death of everything except the tuber, whereas R. africana has a short, perennial stem, or rootstock, which is very prolific of offsets, and, although it loses many leaves annually, it is not deciduous. R. Rehmannii differs from all the other known species in having lanceolate leaves, which are green with a few linear blotches of white. The spathe is usually white, greenish-yellow at the base, but it is sometimes found with rose-tinted or even wholly vinous-red spathes. Whether this is a varietal difference or due to some special external influence has not yet been determined. Tubers have been known to produce coloured spathes at one time and white at another. Hybrids between these several species have been recorded, though it is doubtful if they are more than garden sports. There are several well-marked varieties of garden origin of R. africana. Other species of Richardia in cultivation are hastata, melanoleuca, and albomaculata, but they are not of much account as decorative plants. According to Mr. N. E. Brown, in *Flora of Tropical Africa*, R. Pentlandii is a synonym of R. angustiloba, first described by Schott in *The Journal of Botany* in 1865. It was introduced into cultivation in 1902 by Mr. R. Whyte, Pentland House, Lee, who showed it in flower in that year at a meeting of the R.H.S. when it was awarded a First-class Certificate. R. Elliottiana was shown two years before by Captain Elliott, Farnborough House, Hampshire, and was also awarded a First-class Certificate.

FIG. 66.—RICHARDIAS.

R. ELLIOTTIANA. R. AFRICANA (ÆTHIOPICA). R. RHEHMANNII. R. PENTLANDII.

Exhibition of Allotment Produce.—An exhibition of produce by the successful competitors in the Cereal and Root Allotment Holders' Competition, arranged by the Sulphate of Ammonia Association, will be held on Thursday, the 31st inst., at 36, Horseferry Road, Westminster, London. The exhibition will be open from 12 a.m. to 4 p.m.

Moss as a Dressing for Wounds.—The value of Sphagnum moss as a surgical dressing is now generally known, and there are 45 depôts in Ireland to which the moss is sent to be made up into surgical dressings of standard sizes. Over one hundred collecting stations scattered over the country supply moss to the Royal College of Science in Dublin. Nearly a million finished articles have now been exported, apart from the work done by the Ulster Sphagnum Moss Association. In 1915 the demand on the Irish organisation came almost entirely from France, but gradually and steadily it increased, till now a constant stream of supplies goes to military hospitals in Ireland, England, France, Italy, Serbia, Egypt and Mesopotamia.

War Items.—Messrs. Laing and Mather, nurserymen, gave to the Border Union Agricultural Society, without any reservation, the entire nursery stock in their Kelso nursery for sale on behalf of the Edinburgh Hostel for Limbless Soldiers, Newton Don Red Cross Hospital, and the R.O.S.B. Prisoners of War Fund. Four auctioneering firms gave their services free at the sale, which was held on the 12th inst. There was a very large attendance, and the sum of upwards of £2,000 was realised by the sale.

The many friends of Mr. A. H. Cooper, gardener at Broadway Estate Gardens, Laugharne, Carmarthenshire, will learn with regret of the death of his son, Mr. A. W. Cooper, who was killed during the evening of the 3rd inst. whilst his platoon was advancing across the open to capture a hostile trench. In a letter informing Mrs. Cooper of her son's death, his commanding officer wrote: "He will be greatly missed, for his cheerful manner had endeared him to all of us."

—We regret to learn that Gunner A. W. Berry, R.G.A. (Siege Battery), was killed by a bomb on September 15 last while his battery was moving to a fresh position. Before enlisting, Mr. Berry was for many years employed in the Hampton Court Palace Gardens. His particular work was on the "Long Border" and the rose beds, which were special features of these public gardens in pre-war days. His genial disposition and pleasant manner in answering the manifold questions which always fall to the lot of workers in public gardens made him as popular with the many regular visitors as he was with his fellow-employees.

Official notification has been received that Private Thomas Henry Vaughan, Royal West Kent Regiment, youngest son of Mr. and Mrs. F. Vaughan, of Heathcote, Boughton Heath, Chester, was killed in action on September 19, at the age of 23 years. Private Vaughan, before joining the Army, worked with his father as a market gardener. He was awarded the Military Medal recently.

HOME CORRESPONDENCE.

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

The Fuel Problem.—Allow me to cordially support the remarks on the fuel problem so appropriately made in your issue of September 28. I will quote one sentence only of your leader, viz.: "It is surprising how many plants are able to withstand a lower temperature than we have been accustomed to provide for them." And fruits, too, may I add, for I have been much interested during this past season in two vineries under the care of Mr. Geo. Reynolds, in the Queensbury Park Gardens. No artificial heat whatever has been used from start to ripening, yet the Grapes were excellent, the bunches being of medium size, with berries somewhat beyond the average, and the finish all that one could desire. When I say that the varieties were Muscat of Alexandria and Madresfield Court, each in a house by themselves, I think it is a remarkable achievement, and in a season that has not, at times, been all that one could wish from the point of perfecting a crop such as this, and a heavy crop too. These vineries are of average size, three-quarter span in shape with an abundance of air space over the vines and an abundance of lights, with ample means of ventilation. The borders are all inside. In my own case, I have succeeded better than usual this year with Tomatos, and without the use of fire heat. With respect to plants, it will be well, as you advise, to reduce the number of all decorative plants, and keep the fires as low as possible. Many greenhouse plants are safe when the thermometer does not fall below 32° Fahr. *Jas. Hudson, Gunnersbury House Gardens.*

"Rogues" among Potatos (see pp. 83, 102, 122, 142).—The question raised by Mr. Jackson on this subject is worthy of more than passive notice, and the point to which he draws attention deserves careful consideration. Passing over mere variations in colour, I venture to think that mutants do certainly arise among Potatos, but, as Mr. Jackson has pointed out, they are too often considered to be rogues, and nothing more. It is, of course, extremely difficult to distinguish between what is a "rogue" and what is an unequivocal example of mutation. The great majority of Potato growers are dealing with conditions of cultivation under which the elimination of "rogues" is a difficult matter. Unless what Mr. Arthur W. Sutton refers to as "suitably controlled conditions" are thoroughly ensured, one cannot discern between what are genuine mutants and pure and simple "rogues" with any degree of accuracy. For example, one has to be certain that every tuber used for planting is true to type; that the soil upon which planting is done is absolutely free from "ground keepers" (or tubers left in the soil from some previous crop); and that no tubers exist amongst any manure that may be used. When a trial is made under such conditions, and the experimenter is absolutely sure that no error can possibly arise from mixing, then, if what is generally termed a "rogue" should appear in the trial, I hold that the grower is entitled to consider that a mutant has arisen and is worthy of being grown for the purpose of further examination and comparison. I have long held the opinion that the Potato is in a state of mutation—this fact has arrested my attention on many occasions in a long experience of the matter—but owing to a doubt as to the trueness of the stocks used for seed sets or the condition of the soil I have hitherto had to pass what I thought to be mutants owing to the element of uncertainty. I have observed, as one example amongst several, that a certain early Potato has consistently produced amongst its crop an odd tuber or two of something that is almost identical with Epicure. But, as already stated, I have never been completely satisfied that this mutation was accomplished under "suitably controlled conditions." There was always the element of doubt which could never be satisfactorily disposed of, and I therefore preferred to call what resembled Epicure a "rogue." Until the beginning of last year I have never had the opportunity of experimenting upon this aspect of Potato cultivation under conditions that were beyond doubt, but I am now favourably situated in this respect. Mr. Arthur W. Sutton will, no doubt, be interested in the following experience. Last year I was given one tuber of Edzell Blue by one of the officials of the Board of Agriculture for Scotland, with the assurance that it came from the original stock of that variety. It was cut into one or two portions bearing "eyes," and cuttings were also taken. The plants were grown in virgin soil free from manure of any kind—and the crop was kept for seed and planted in spring. One plant the seed set of which was true to type—has produced several kidney shaped tubers totally different in character from Edzell Blue. They are not only distinct in shape but in colour, the texture of the skin, and the vascular system of the tuber. Were not the matter beyond doubt, in my mind, so far as accuracy is concerned, I should have treated these distinct tubers as "rogues" in the ordinary way, especially so as many stocks of this excellent variety are not wholly true. This mutation—for such I hold it to be—will be grown on and carefully watched. Mr. Cuthbertson has had an opportunity of examining these tubers.

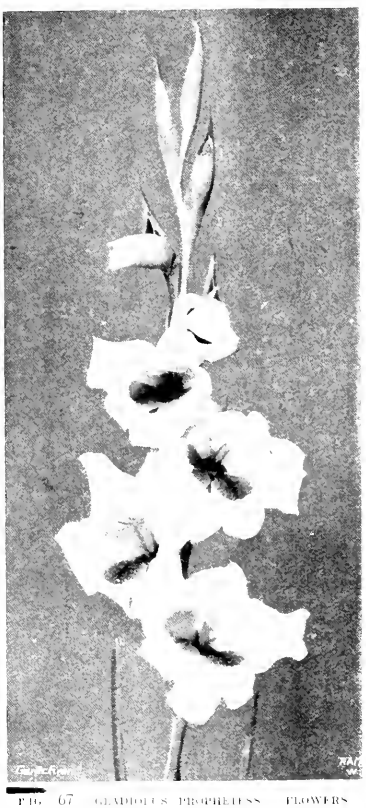

FIG. 67.—GLADIOLUS PROPHETESS.—FLOWERS CREAM WHITE, BLOTCHED WITH REDDISH BROWN.

I have also a white tuber from Edzell Blue (for the second time), but this is what I term a simple and common example of colour variation such as has already been dealt with by Messrs. Cuthbertson and Sutton. I would remind Mr. Sutton that there is nothing to prevent what I call "mutation" among Potatos, and new varieties can undoubtedly be obtained by asexual means. In dealing with almost any commercial variety of Potato one has to remember that its parents are not its only ancestors, and its progeny, of sexual or asexual derivation, is capable of a wide variation in consequence. *George M. Taylor, Mid-Lothian.*

Citrus trifoliata.—May I draw attention to an error which has somehow crept into my note on this plant? Its leaves are described as "trifoliate." Trifoliolate is the word which should have been used, and instead of lateral leaves, it is lateral leaflets that I should have written. In adopting the genus Aegle, altered, however, to Citrus, I followed Mr. Bean in *Trees and Shrubs Hardy in the British Isles* as the latest guide one could follow. I quite agree with Citrus. Indeed, I think it is to be preferred for this plant, but Mr. Bean probably had some definite reason for adopting the genus Aegle. The *Index Kewensis*, as pointed out at various times, is not always to be regarded as an authority on nomenclature—it is a book of reference to authorities. The *Genera Plantarum*, which is a book of responsible determinations, so defines the genus Aegle, that this plant must be included. The single leaflet of Citrus is recognised and the genera Citrus and Aegle are contrasted "1-foliolate" and "3-foliolate." Mr. Bean no doubt followed *Genera Plantarum*, and so does the *Kew Handlist of Trees and Shrubs*. While this plant strikes one as being a Citrus, Aegle Marmelos is very different, so that possibly our present Citrus trifoliata may be regarded as a connecting link between the two genera. *R. Irwin Lynch.*

Green Corn (see p. 146).—*A. N.* may perhaps learn in four or five years to detect the right moment to gather, but after more than twice that span I may confess to being not quite sure sometimes. But I do not "wait and see" as he has done—I simply "look and see" when the "silk" has withered back and the cob feels plump and the sheathing is fresh and green. A small tear or slit downwards to bring a few of the growing seeds into view will soon show whether the cob should be left awhile either to mature a little more or to ripen completely. After trying many sorts from our seedsmen, I got a satisfactory variety from Heinemann, of Erfurt, which I have kept going now for many years; though seeds ripen in the open now that the source is closed I always keep a few plants under glass for safety. I generally make four sowings for succession: this year the last sowing, I fear, will not make much else than rabbit food. In the late summer most plants do not seem to have grown well. *H. E. D.*

Large Peaches (see p. 160).—I recently saw several fruits of the variety Salwey grown by Mr. Brown in a Peach house in the garden of Mrs. Van Raalte, Brownsea Island, near Poole, Dorsetshire. The largest fruit weighed 15 oz., was well coloured, and for the variety was good in flavour. This tree is noted for the large fruit it has produced during the eighteen years it has been growing as a standard with a 4-feet stem; the branches are trained under the roof, so it is only a standard in the sense of its stem. Three years ago this tree produced a fruit weighing 10 oz., was 4 inches to 5 inches deep, and had a circumference of 14 inches. *E. Molyneux.*

The Late Mr. Arnold Duley.—It was with regret that I read in the *Gardeners' Chronicle* an account of the death of Mr. Duley, who served under me several years ago. While head gardener to the Grand Duke George of Russia he sent me several interesting letters, describing the climate, people, and other interesting details of the Crimea. He was a shrewd observer of men and conditions that he came in contact with. *T. H. Slade.*

Early and Late Peas.—May Queen and Chelsea Gem proved to be two of the best varieties here last spring. From plants raised from seed sown out-of-doors on a south border the second week in February, we were able to gather well-filled pods in the second week of June. The last named variety was sown the first week in July on a south border, and we are still gathering the second week in October good pods of the same. Autocrat and Michaelmas, sown the beginning of June, have been very prolific. *A. B. Wadds, Englefield Gardens, Reading.*

GLADIOLUS PROPHETESS.

THE beautiful new variety of Gladiolus named Prophetess, illustrated in fig. 67, was exhibited by Mr. J. S. Parker, Upton Cheyney, Bitton, at the meeting of the Royal Horticultural Society on August 27, 1918. An Award of Merit was awarded the novelty by the Floral Committee on the same occasion. The spike is exceedingly handsome, with bold flowers of cream white, blotched on the three lower segments with red dish brown.

SOCIETIES.

ROYAL HORTICULTURAL.

Scientific Committee.

OCTOBER 8. *Rhododendron hybrids.*—Mr. E. Mezitt, Lamellen, St. Tudy, Cornwall, sent flowers of the beautiful deep red Rhododendron montigenum, raised by him from seed collected by Mr. G. Forrest. The plant flowers in April, and again in October as a rule.

Hybrid Buddleias.—Mr. W. van de Weyer, of Smedmore House, Corfe Castle, Dorset, sent flowering shoots of an interesting hybrid—Buddleia globosa ♀ × B. magnifica ♂. The flowers were in racemes of globose heads, purple in the bud, yellow to orange as they open, and very sweetly scented. The following note upon them accompanied the specimens: "I am sending here with some late flower trusses of some hybrid seedlings of Buddleia I have raised. They are, I think, interesting, as they are B. globosa (female parent) × B. magnifica (male parent). Some are the second generation of this cross seeded. The second generation shows no difference from the first. One gets just the same variations. The curious thing to me is the large percentage of pale coloured seedlings one gets, and I have not yet got an orange one. They all show B. magnifica leaves, except two, which have not yet flowered, and all flower at the same time, or later than B. magnifica, more flowering at the time of B. globosa. All are scented. I have also some crosses between Buddleia globosa (female parent) × Buddleia madagascariensis (male parent). These hybrids are not quite hardy. They flower very early, before B. globosa. All show the leaves of B. globosa, only as large as B. madagascariensis. All have large, orange ball trusses, like B. globosa, only the balls are larger, and none that has flowered so far is scented. I might add B. globosa × B. magnifica set seed freely naturally. B. globosa × B. madagascariensis does not do so, in fact, has never set a seed naturally, and I have been away in France, so have never pollinated the flowers by hand."

OCTOBER 22. On this date the meeting held at Westminster was fortunate in being attended by bright weather, and, further, there was a capital exhibition of interesting subjects and a fair attendance.

An extra batch of potatoes grown from seeds sown in July was especially interesting, as was also the Royal Horticultural Society's Food Production exhibit, consisting of about fifty cases of models illustrating the life histories of insect and fungous pests more or less common to garden crops; models of the processes of digging and trenching; models of a fruit grower, plant grower, of the Waley Orchard, and a garden path; a series of Harrod Boards; printing charts, and other exhibition features. This exhibit was the largest and most comprehensive the Society has displayed. Various parts of the country were represented in the Food Production competitions.

The Floral Committee granted six medals and the Veitchian Committee three medals, the Fruit and Vegetable Committee three medals, and the Orchid Committee a First-class Certificate and two Awards of Merit to Orchids.

During the afternoon Mr. ARTHUR W. SUTTON gave a lecture on "Summer Sown Vegetables as Secondary Crops."

Floral Committee.

Present: Messrs. H. B. May in the chair, J. W. Barr, John Green, G. Routh, George Harrow, John Heal, J. F. McLeod, Chas. Dixon, Arthur Dixon, Alex. Jennings, W. Howe, W. J. Bean, W. B. Cranfield, E. A. Bunyard, E. H. Jenkins, Chas. E. Pearson and C. R. Fielder.

Messrs. CHEAL AND SONS' group of trees and bushes, with brightly coloured foliage, was much admired. It contained many species of Berberis, Sorbus, Rhus, Acer, Viburnum, Liquidambar, Quercus and Pernettya. Nerine, were well shown by Mr. J. LEECH, Messrs. BARR AND SONS, and Mr. RITCHIE, the latter also staging *Delphinium Fargesii* with seven of its violet coloured fruits; Viburnum *theiferum*, brightly berried; Rosa *fargesia*, and a pink form of Rhododendron Thomsonii.

Among Messrs. BARR AND SON'S Nerines the blush pink Colleen and the broad petalled Mrs. Douglas were notable varieties, while in Mr. LEECH'S collection the variety Elegantissima was conspicuously good.

AWARDS OF MERIT.

Aster Beechwood.—A useful addition to the group of dwarf Michaelmas Daisies. It has the habit of growth and style of flower of Aster Beauty of Colwall, but the blooms are of a rich bright blue shade of colour. Shown by Messrs. BARR.

Pink Mrs. Donald Lloyd Group.—Large expansive and fragrant. Velvet has very large and rounded petals of a deep violet purple hue with a few deep markings at their bases. These latter are almost hidden by four small, petaloid stamens which are white, with violet lines, and form a distinct "eye" to the flower. The blooms are carried on long, sturdy stems. Shown by Mr. J. J. KETTLE.

Nerine Mrs. H. J. Elwes.—A very beautiful variety, with medium sized flowers of excellent shape borne on a compact but not too dense umbel. The segments recurve at the tips and the margins of the recurved parts are undulate. The colour is a dainty shade of shell pink with a ruffled zone of band that is not sufficiently distinctive to give a striped appearance. Shown by Messrs. BARR AND SONS.

Rose Brightest and Best.—A sturdy variety of the Nova Belgiæ type, multibranched, free flowering and graceful, and growing 4 feet to 5 feet high. The flowers are 2 to 3 inch across and have three rows of ray florets of a bright rosy mauve colour, those white at the base, while the disc centre. Shown by Mr. W. WELLS, JUNR.

Gipsies.

Silver Flag Medal.—To Messrs. H. B. MAY AND SONS, for Ferns and Caladiums, and Messrs. J. CHEAL AND SONS, for autumn coloured trees and shrubs, and Messrs. BARR AND SONS, for Dahlias.

Silver Banksian Medal.—To Mr. J. J. KETTLE, for Vases; Mr. J. LEECH, Gorrelsbury, for Nerines, and to the Rev. F. H. PEMBERTON, for Roses.

Bronze Banksian Medal.—To Mr. G. RITCHIE, for Hardy plants and Nerines.

Orchid Committee.

Present: Sir Jeremiah Colman, Bart., in the chair, Sir Harry J. Veitch, Messrs. Jas. O'Brien, Lewis Richardson, W. H. White, R. A. Rolfe, Frederick J. Hanbury, Walter Cobb, W. J. Kaye, H. Ballantine, Sydney Morris, Fred Sander, H. Armstrong, Percy Kidd, H. T. Pitt, Colonel J. Wilson Potter.

AWARDS

First-class Certificate.

Odontoglossum crispum Ida Pagaden, variety of massive exception.—A grand flower in the product of Oak Mr. C. J. and A. McBEAN, Cooksbridge. And true of note and extreme size and their best forms of *O. crispum*. The flower is well made, shape with broad, overlapping sepals and petals. The inner parts of the segments are heavily blotched with reddish chocolate on a white ground. The broad lip is exquisitely marked, adds much to the beauty of the flower.

Awards of Merit.

Laelio-cattleya Linda C. Dawsonii var. L. C. Leeches, from Messrs. J. and A. McBEAN, Cooksbridge. A very desirable hybrid in which L. C. Hippodamia and C. Hardyana × L. tenebrosa plays a leading part, but the second introduction of *C. Dowiana aurea* gives perfect shape and fine substance. The sepals and petals are of medium rose with a slight gold shade. The lips are rose purple in front, with a yellow disc and it has orange lines running from the base.

Cattleya Iris var. Brigadier, Exquisite Perfection × *Mrs. Pitt*, from Dr. MARTIN LEGRAND, Beaulieu, Roehampton, Orchid growers, Miss Robertson. Medium flower of fine substance, the sepals and petals deep rose colour. The lips purple with a yellow disc and basal lines.

Grooms.

Messrs. SIDNEY LOW AND CO., Jarvisbrook, Sussex, were awarded a Silver-gilt Flora Medal for a group of excellently well grown and profusely flowered Orchids. Cattleyas, Laelio-Cattleyas and Odontoglossums predominating. Among the Cattleyas a fine specimen of the fragrant, white petalled *C. Lady Ingram alba*, *C. Amanda alba*, the bright yellow *C. Iris Butter cup* and some albinos were noted.

Messrs. CHARLESWORTH AND CO., Haywards Heath, were awarded a Silver-gilt Flora Medal for a excellent group of Odontoglossums, Cattleyas, Laelio-Cattleyas, and other Orchids. Among Odontoglossums "xanthotes" forms were specially attractive, and among the blotched forms *O. Doreen*, of large size and perfect shape, was remarkable. The new hybrid Brasso-Cattleya *Stamonar*, midseason (B. C. Mrs. J. Leemans and Sophronitis has yellow-buff sepals and petals and intense ruby coloured lip with deep orange-yellow centre.

Messrs. J. AND A. MCBEAN, Cooksbridge, were awarded a Silver Banksian Medal for a selection of hybrids. A new cross was recorded in Laelio-Cattleya Inez (*C. Warscewiczii* × *L. anceps* × *labiata*), a blush white flower with elongated, purple lip.

Messrs. ARMSTRONG AND BROWN, Tunbridge Wells, showed a select group of rare and home-raised Orchids. One of the most interesting was the pure white *Laelia purpurata purpurata alba*, which in point of size and shape is an improvement on the original. Odontioda Hector (Oda. Cordelia × Odm. crispum Raymond Crawshay) has a fringe and prettily marked flower. Laelio-Cattleya Pathin var. Domitian (L. C. Dominiana × *C. Dowiana aurea*), a well formed flower of rich colour, a pretty golden yellow form of L. C. Golden Wren, and the handsome Brasso-Laelio-Cattleya General French were included in the collection.

Messrs. FLORY AND BLACK, Langley, Slough, showed the pretty Sophro-Laelio-Cattleya Hannington, Langley variety, a splendid form of Odontoglossum waltonense Rex, the attractive Cattleya Mrs. J. Ansaldo, and Brasso-Cattleya Mossiæ *nigrina*.

Messrs. SANDERS ST. ALBANS, staged a small group, the best plants in which were Cattleya Lady Veitch var. Victory, a large, white flower with orange coloured disc to the lip, and *C. Gaskelliana* Triomphe de Bruges, one of the best dark forms with rosy mauve sepals and petals and purple crimson lip with fine gold lines from the base.

Mrs. BISCHOFFSHEIM, The Warren House, Stanmore (Orchid grower, Mr. W. H. Young), showed Brasso-Cattleya Digbyano-Mendelii alba.

De Meuleneire, Rochampton, sent Odontoglossum Meredithiæ Rossii rubescens × *crispissimum* with blush white flowers spotted with red brown, and *O. mirabile* var. Reyndii, a finely spotted form.

PANTON HALL, Esq., Ashtead Park (Orchid grower, Mr. W. H. White) showed Laelio-Cattleya Maquida, Ashtead Park variety, a very fine and richly coloured flower with dark ruby crimson lip.

H. T. PITT, Esq., Rosslyn, Stamford Hill (gr., Mr. Hurrell) showed the yellow Odontoglossum grande Pitturium.

Fruit and Vegetable Committee.

Present: Mr. Joseph Cheal in the chair, W. Bates, Owen Thomas, W. H. Divers, J. C. Allgrove, Edgar Beckett, A. Bullock, John Harrod, E. A. Bunyard and George S. Berry.

Messrs. SUTTON AND SONS' exhibit of vegetables raised from seeds sown in July attracted a great deal of attention from visitors who had no idea such excellent crops could be obtained fifteen weeks after sowing. Especially good were the Tender and True Cabbages, First Crop Cauliflowers, Favourite Carrots, White Gem Turnips and Matchless Cabbage Lettuces. (Silver-gilt Banksian Medal.)

Mr. H. CROST contributed a large collection of Apples, in which were handsome examples of Cox's Orange Pippin, Newton Wonder, Bramley's Seedling, Blenheim Pippin and Blue Pearmain. (Silver-gilt Banksian Medal.) Messrs. FELTON AND SON displayed some wonderfully fine Doyenne du Comice Pears, and Cox's Orange Pippin and Allington Pippin Apples, the latter brilliantly coloured. (Silver-gilt Banksian Medal.)

A small exhibit of first crop Carrots, Parsnips and Dutch Brown Beans, grown by girls from 7 to 17 years of age at St. Paul's School, Hammersmith, gained a Certificate of Appreciation.

NATIONAL CHRYSANTHEMUM.

OCTOBER 21.—No novelty was forthcoming at the Floral Committee's meeting at Essex Hall on the 21st inst.

At the meeting of the Executive Committee, held at the British Florists' Federation Offices, Covent Garden, in the evening of the same day, Mr. Thos. Bevan presided over a good attendance. Arrangements were made for the annual exhibition to be held on November 1. One new member was elected, and the interim financial statement showed a balance of £50 8s. 6d. An interesting discussion followed the formal business, and as an outcome of this a small committee was appointed to draw up a list of the best early flowering Chrysanthemums suitable for outdoor cultivation.

NATIONAL SWEET PEA.

OCTOBER 22.—There was a small attendance at the Annual General Meeting of the National Sweet Pea Society, held on the above date at the offices of the British Florists' Federation, Wellington Street, Covent Garden. The president, Mr. E. W. King, presided, and after the preliminaries had been disposed of he moved the adoption of the report. The motion was seconded by Mr. J. S. Brunton and carried. In the report special reference is made to the part taken by the Society in the Trafalgar Square Floral Fête in June last. At the Society's stand £131 14s. 10d. was taken, and this amount was supplemented on the occasion of the show at Westminster on July 2, and finally reached £197 13s. 4d. The president read letters from the Duke of Portland congratulating the Society upon its splendid help on behalf of the British Ambulance Committee, and stated that an ambulance was purchased with this money and is now in France, with a little brass plate on it notifying to all and sundry that its presence there was due to the National Sweet Pea Society.

The financial statement shows a balance of £7 17s. on a year's turnover of £169 18s. 10d., the chief items of expenditure being £89 9s. 9d. for printing and stationery; £50 secretary's salary; and £10 15s. 3d. for postages and telegrams. On the receipts side income from 1918 subscriptions stands at £99 7s. 0d.; 1917 subscriptions at £20 5s. 6d., and 1919 subscriptions £2 1s., all of which indicates continued interest in the Sweet Pea and its special Society.

Votes of thanks were accorded Mr. E. W. King (president), Mr. J. S. Brunton (chairman), Mr. E. Sherwood (treasurer), Mr. H. B. Tagwell (secretary), and Mr. R. Gluyas (auditor), all these officers were re-elected to their respective positions. The committee was re-elected, and four vacancies arising were filled by the election of Messrs. Dameram, Blundell, Forman and Peyman.

It is the intention of the committee to hold a Sweet Pea show at Westminster on July 1, 1919, and arrange a competition for the Society's dozen or so challenge cups.

CROPS AND STOCK ON THE HOME FARM.

THE PLOUGHING OF GRASS LAND.

IT is not known yet whether more grass land is required for cereal crops, although it is suggested that 1,000,000 more acres are needed. The matter will no doubt be settled by the various War Agriculture Executive Committees, which will arrange the quota for each county. I am in favour of breaking up poor pastures, as these are more remunerative as arable land.

The bulk of small crops are traceable to mismanagement. The occupier does not trouble to improve the land by draining or the application of suitable manures under the plea that labour is short. A want of inclination is often the main cause of neglect.

I do not think it can be doubted that at least 75 per cent. of the grass land ploughed up during the past two years has been a success, and this is a quite fair average under all circumstances. Many of those who do not wish to plough grass land say the crops following the second year are so inferior and that many more years must elapse before good pasture can be produced again. I contend that two years of superior cultivation will produce a good foundation for a future sward.

Oats may follow Wheat the second year if the Wheat crop was at all satisfactory. If not, Potatos and Mangold succeed admirably, and too many of the former cannot be grown, whilst Mangolds are always in demand by cowkeepers. In stiff, moist land Beans are a remunerative crop; indeed, there are plenty of possible and remunerative changes of crop if people have the will to try them in a progressive manner.

I am not in favour of ploughing up good grass land that produces heavy yields of grass or hay, because hay, milk and cattle are as much needed as Corn, but such land may be improved by the application of suitable fertilisers. The manner in which some advisory committees proceed in ordering certain fields to be ploughed is not in my opinion the best. To order a certain field to be ploughed against the advice and the offer of another by the occupier, who should understand what such fields are capable of, is the way to cause friction. A mutual agreement between the occupier and the committee as to the ploughing up of certain fields is the most likely method of success.

When an occupier agrees to plough a certain area of grass land he will plough that from which he is likely to get the best return, because any loss falls upon himself, except in certain cases where he can prove the loss was not due to his mismanagement. Cases for compensation need to be strongly supported by evidence.

The best time for ploughing grass land for cereal crops is a debatable point amongst cultivators. Some prefer to plough early enough to allow the turf to decay before the Corn is sown. In Southants we find success is more certain when sowing quickly follows ploughing. The argument for this plan is that if wireworms are in the turf they first work through the turf, and in the meantime the Corn is growing out of harm's way, because seldom, if ever, do wireworms affect the plant after it has made three leaves, but, when the turf has decayed, the wireworms are waiting for the newly-grown plant, and hence there is so much destruction. For Wheat and winter Oats the sowing should follow the ploughing up in October, or quite early in November. For spring sown Oats or Barley the ploughing should not be done until the end of February or early in March in southern counties.

The manner in which the ploughing is done is very important. Many farmers fail to have the whole of the grass therefore much of it grows between the furrows and long before summer is over the Corn crop is smothered by the grass and cannot do well. Every plough should have a skim coulter attached which cuts and turns over a small portion of turf in front of the main coulter, thus providing for the complete burial of the grass. If a heavy presser follows the plough the grass must decay, as air and light are absolutely shut out.—*F. Molyneux, Swanmore Farm, Bishop's Waltham, Hants.*

TRADE NOTES.

UNITED COUNCIL OF SEED TRADE ASSOCIATIONS.

SEEDS FOR ALLOTMENTS.—The Retail Committee is in general sympathy with the recent action of the Horticultural Trades Association, in connection with the scheme for the supply of seeds to allotment holders. Accordingly, it is deemed unnecessary to take separate action in view of the time and attention which has been devoted to the matter by the Horticultural Trades Association.

TESTING OF SEEDS ORDER, 1918.—A member reported that he had received the following letter from the Food Production Department with regard to the date of germination test:

DEAR SIR,—I am to refer to your letters of the 15th July and 15th August last with regard to Paragraph 2 m of the Testing of Seeds Order, 1918, which requires the month and year in which the test was made to be stated, unless such test has been made within six months from the date of sale or exposure for sale, and to say that the matter has come up for consideration before the Testing of Seeds Order Licensing Committee.

It is understood that your difficulty lies in specifying precisely the exact month of the test although it is known approximately within a few weeks. In such circumstances the Committee saw no objection to your stating the earliest known date, or declaring that the test had been made "since" a specified month and year.—Yours faithfully,

(Signed) R. J. THOMPSON,
For Controller of Supplies.

LAW NOTE.

GARDENER A MALE SERVANT.

AN interesting point respecting the employment of male servants was decided by the Oxted, Surrey, magistrates, when Mr. Edmund Howard Wilkins, Tatsfield, was summoned by the Surrey County Council Licensing Authority for keeping a gardener without a licence.

Defendant contended that although the man looked after the garden, with the help of a boy, he was chiefly cultivating food products, as he looked after two cows and forty head of poultry, and was not a luxury servant, but a labourer engaged on utility work. The prosecution urged that the man's principal occupation was that of a gardener. The bench took this view, and fined the defendant £5.

Obituary.

M. Pierre Guillot.—With regret I learn of the sudden death at Lyons, on September 27, of this distinguished French rosarian, the head of one of the oldest French firms of raisers of new Roses. Amongst other varieties his firm has given us La France, Mme. Falcot, Mme. Hoste, Gloire Lyonnaise, Mme. Leon Pain, and Comtesse d'Oxford. The third member of his family whom I had the pleasure of knowing, he had a great love of his favourite flower. He was a genial, kind-hearted man from whom any visitor to Lyons had a warm and attentive reception. *George Paul.*

ANSWERS TO CORRESPONDENTS.

GINKGO, OR MAIDENHAIR TREES.—*F. C.* The largest specimens of Ginkgo in this country is recorded in *Trees of Great Britain*, vol. I., p. 60, are (1) Kew Gardens—62 feet high, 10 feet 4 inches in girth in 1904; (2) Sherborne, Dorset—70 feet high, 7 feet 7 inches in girth in 1884; (3) Blaize Castle, near Bristol—68 feet by 9 feet 3 inches in 1905. See also Elwes, in *Gardeners' Chronicle*, October 27, 1917, p. 156, fig. 62. There are also large trees at (4) Frogmore, Windsor—74 feet high, 9 feet 3 inches in girth in 1904, and at Melbury (Dorset), Coldham Park (Kent), Longleat, and South Woodford. As these records were made some years ago it would be necessary to remeasure all these trees to ascertain which is now the tallest.

NAMES OF FRUITS.—*A. F.* Not recognised. Probably a local variety. *W. D. S.*, Herefordshire Pearmain.—*H. W. C.* c, Green Woodcock; k, Starmer Pippin.—*J. W.* 1, Reinette Tardive; 2, Beauty of Kent; 3, Barnack Beauty; 4, English Codlin; 5, William's Favourite; 6, Norfolk Stone Pippin.—*J. M. F.*, Apple Late Prince Albert.—*D. Pearman.* Claygate Pearmain.—In place of Cox's Orange Pippin you might try Allington Pippin, D'Arcy Spice, and Margil.—*Col. Northbrach.* 1, Duchess of Oldenburg; 2, Tower of Glamis; 3, Bismarck; 4, Golden Noble; 5, Mère de Ménage; 6, New Bess Pool; 7, not recognised; 8, Hanwell Souring.

NAMES OF PLANTS: *T. L. L.* The "Fern like" plant is Cycas revoluta; the broad leaved specimen is the Loquat, Eriobotrya japonica; and the other is probably a Protea species—send when in flower.

Communications Received.—Mme. P. G.—F. S. & S.—D. D. R.—G. H.—J. H. R.—R. W. B.—I. W. R. E. H. G. K.—F. & Son.—S. W. W.—C. H.

THE
Gardeners' Chronicle
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ILLUSTRATIONS.

NOTES FROM KEW.—X.*

KEW is not by any means a dull place in October, and although the war has caused a cutting down of decorative effort, the permanent features keep the gardens alive. With its great wealth of trees and shrubs, autumn effects are always good at Kew, and as there is plenty of colour this year, the Beeches in particular being glorious, an afternoon in the gardens affords a feast of delight. There are numerous fruits, too, particularly Hips and Haws. I do not remember a year when the Hawthorn fruits have been more abundant, notwithstanding conditions which spoilt their relations, the Apples and Pears, in all parts of the country. The best of the Crataegus as shown fruited trees are Crus-galli, mollis, orientalis var. sanguinea, Oxyacantha var. Gireoudi pruinosa, punctata, prunifolia, and Downingii (syn. tomentosa).

Has anyone tried to cross Hawthorn with Apple or Pear? It might happen that, as with the Siberian Crab crossed with Apple, the mixing of Hawthorn and Apple would be a horticultural gain. I have not tasted a Crataegus fruit that is fit food for man, whatever our ancestors thought of them. I know that in America some of them are eaten; the Apple haw, C. aestivalis, for example, ripens early, the haws being fragrant, with a thick, juicy, acid flesh, and they are gathered in large quantities, to be made into preserves. Still, I would rather have the Cherry Apples, which are just as easy to grow as Hawthorns.

Pyracantha and Hawthorn might also be crossed with good results, if only to get the fruitfulness and lasting winter beauty of the Pyracantha into the Hawthorn. Of possible crosses there is no end, but they take time and are frequently failures, as every experienced breeder knows. The best garden races are pure with respect to species. There are exceptions. Roses and Rhododendrons, for example, but the rule is supported by Apples, Pears, Plums, Grapes—in short, I believe by all the fruits and all the vegetables, whilst among what we call flowering plants their names are legion. I suppose we must look upon species as only very pronounced varieties; still, practically all the great domestic races of plants are unitarian, so to speak, each group having sprung from one species.

A *Novice* writes disapprovingly of what I said in my last "Notes" with regard to the part Kew might play in the promotion of useful gardening as distinguished from the purely ornamental. There is room for both. The question is, should the great national garden interest itself in one and neglect the other—the other being at the present time the more important? The Mother Country has needs as well as the Colonies, for which Kew has done so much. As Dr. Lindley said in his report on Kew and its capabilities in 1840:—

"A national garden ought to be the centre round which all minor establishments of the same nature should be arranged: they should . . . all act in concert with it, and through it with one another, reporting constantly their proceedings, explaining their wants, receiving their supplies, and aiding the Mother Country in everything that is useful in the vegetable kingdom. Medicine, commerce, agriculture, horticulture, and many valuable branches of manufacture, would derive much benefit from the adoption of such a system. From a garden of this kind the Government would be able to obtain authentic and official information on points connected with the founding of new colonies; it would afford the plants there required without its being necessary, as now, to apply to the owners of private establishments for advice and assistance."

In this spirit Kew has worked for the past 70 years or so, and has accomplished great things. There is need for the same kind of help at home, and it would not be difficult for Kew, with all its resources and experience, to provide it without slacking off in other work of importance. The pathological department is a step in the direction of what is meant, its chief concern being with the diseases and pests of plants of economic importance, particularly fruits and vegetables grown in this country.

Kew professes to be a training school for gardeners, yet neither fruits nor vegetables are cultivated there, although the home gardener who has not been trained in their cultivation is like a man with one leg. In those times especially a gardener should know the best methods for the production of good fruits and vegetables. It is no answer that he can learn these things in other gardens, seeing that this applies to the other department of horticulture also. My dream is to see Richmond Park a school of forestry, and the Old Deer Park devoted to fruits and vegetables, and all combined to form the great national garden, Kew.

When Sir William Hooker was made Director of Kew in 1841, there were only about 15 acres devoted to collections of plants, and a few greenhouses. Before then, fruit and vegetables were grown at Kew to supply Buckingham Palace! What was then the fruit room is now Museum No. 1, the first museum of its kind to be formed, and the Orangery of that time is now a museum of timber. The former residence of the Duke of Cambridge is now devoted to a collection of woods and other exhibits, to illustrate British forestry products. "Imperial Caesar, dead, and turned to clay, might stop a hole to keep the wind away."

A *Novice* will probably tell me that what is required is not an essay on what Kew has been or might be, but Notes on the Kew of to-day. Well, progressive work has been somewhat hind red by the war. Still, something has been done to keep things moving and visitors interested. I have never seen the Conservatory (No. 1) gayer than it is now, and there are many interesting plants in flower, as well as those that are commonplace. On a recent Sunday afternoon, visitors crowded the house as though it had been the opening day at the Royal Academy.

Certainly the British crowd appreciates flowers. It was Mr. Chamberlain who complained to the late Director that the Palm House and Temperate House were dull because there were few flowers in them. Big houses will not grow flowers, so we grow them elsewhere, and put them in the big structures to please those people, the great majority be it said, who look for flowers in a garden whether it be outside or under glass. The Kew Ferns were never better than they are now, but they do not attract visitors. "Only Ferns," they say at the door, and generally they get no further. In the Palm House they are as a rule pleased with the big Palms and other tropical giants, but they have no eye for the collections unless there are flowers. There is a kind of picture hunting. They appreciate the Nepenthes, and the showy flowered Orchids. They also wonder at the Victoria regia, which is a kind of hippopotamus to them, but their great delight is when the Azaleas are in bloom and the Rhododendron Dell is at its best. Flowers, yes; plants, no. All the same, Kew is a place for healthy enjoyment to the many and a museum of interest and instruction to the few.

About 20 years ago Mr. Farini, of Westminster Aquarium fame, brought from the Kalahari Desert some bulbs of a Crinum which he presented to Kew. Some of them flowered, and Mr. Baker named them C. longifolium Farinianum (*Gard. Chron.*, June 25, 1887, p. 833). They were peculiar in having a long necked bulb and very long glaucous green leaves, the flowers being larger than those of the type and flushed with pink. Mr. Sharpe, of Westbury, Wiltshire, was at Kew recently, and he told me he had a Crinum with very long leaves which had grown well and flowered freely with him. He sent a leaf, and it measured 11 feet in length! I have never seen any Crinum leaf as long, but he informs me that the largest on the plant are

* Previous articles appeared in the issues of January 19, February 9, March 9, April 6, May 18, June 8, July 6, August 10, and September 21.

quite 2 feet more. He describes the bulb as "loosely built, 6½ inches in diameter, with a neck 20 inches long." It may be Mr. Farini's Crinum or it may be something new. Mr. Sharpe says that when the plant is in full growth the young leaves spring from a point over 5 feet from the ground. It will be necessary to keep the leaves in coils, as the tails of the Japanese long-tailed cockerels are kept. Mr. Sharpe has presented an offset of his plant to Kew. W. H.

ORCHID NOTES AND GLEANINGS.

SOPHRO-LAELIO-CATTLEYA WARNHAMENSIS.

A SUPERB flower, of brilliant colour, resulting from a cross between Laelio-Cattleya George Woodhams (C. Hardyana × L. purpurata) and Sophro-Laelio-Cattleya insignis var. Olive (C. Enid × S. L. Psyche) is sent by C. J. Lucas, Esq., Wareham Court, Horsham (gr. Mr. Duncan), with whom it now flowers for the first time. The variety has been pronounced by competent authorities who have seen it to be one of the best, if not the best, Sophro-Laelio-Cattleya in point of size and gorgeous colour. L.-C. George Woodhams is noted as a robust growing parent, and in this case the size, form, and depth of colour may be traced to that parent, although the small-flowered scarlet and orange S. grandiflora and L. cinnabarina, the parents of S.-L. Psyche, have undoubtedly imparted the glowing colour to the flower.

The flower, which is 6 inches across, has sepals 3 inch and petals 2 inches in width. The segments have an undulated margin and are of a rich white hue, from which spreads with increasing intensity towards the tips the glowing rose-purple tint which, with its darker veining, overspreads the other parts of the flower, as a rule, most with wavy margins and is of a rich crimson-purple colour with an orange base and numerous branched, golden-yellow lines. The coloring of the base of the lip is yellow, rather narrow, and showing in its shape the influence of the smaller and more bright-colored parent.

The rich colouring appears to be body colour rather than surface colour as in many hybrids.

ACANTHOPANAX LEUCORRHIZUM.

THIS interesting new Araliad (see fig. 68) is one of the most ornamental and reliable members of its family for the pleasure grounds and shrubbery borders. The plant figured as Eleutherococcus (Acanthopanax) leucorrhizus in *Gard. Chron.*, December 9, 1905, p. 404, is E. Simoni, which, among other differences, has smaller umbels of fruits, bristly hairs on both leaf surfaces, and more compact growth, hence it lacks the free and elegant appearance of the species under notice.

A. leucorrhizum is a deciduous shrub, gracefully arching in habit up to 7 or 8 feet in height, and probably more with age. The leaves are mostly in fives; the spherical umbels of flowers are interesting, but not conspicuously showy, and are developed in July. During September the bushes attain their greatest beauty, when laden with umbels of shining black fruits.

Seeds provide a ready means of increase. The plant thrives in most soils which are efficiently drained, with a preference for a light, friable loam.

A. leucorrhizum is a native of Central China.

Photograph by E. J. Watts.

FIG. 68.—FRUITS OF ACANTHOPANAX LEUCORRHIZUM.

Specimens were collected by Dr. Augustine Henry, but we are indebted to Mr. E. H. Wilson for its introduction to gardens in 1901. A. O.

NEW OR NOTEWORTHY PLANTS.

MESEMBRYANTHEMUM ACUTIPETALUM N. E. BR.

As this plant exists in some gardens without a name, and no description of it in English has yet appeared, the one which I give below may enable cultivators to identify it. I think it may possibly also exist in some gardens under the utterly erroneous name of M. aloides, for there are more than one species masquerading under that name in gardens, not one of them, so far as I have seen, being the true M. aloides, which I believe is not in cultivation. The plant described as M. aloides in all modern works is a very different thing to the true M. aloides, as I am demonstrating elsewhere, since those descriptions are all based upon the plant erroneously figured by Salm Dyck as being M. aloides, which was founded upon a Bechuanaland plant introduced by Burchell, whilst the plant represented by Salm Dyck is a very different species that was introduced later by Bowie from a totally different region.

M. acutipetalum belongs to the section Acuta, and is more nearly allied to M. diminutum, Haw., than to any other species, but is well distinguished by its very much shorter flower-stalks.

Plant dwarf, tufted, forming clumps 2-2½ inches high, including the flowers. Leaves 8-10 to a growth, ascending-spreading, ⅝-1½ inch long, 2½-3 lines broad and 1¾-2 lines thick at the base, viewed from above gradually tapering from the base to an acute apiculate apex, and in side view of nearly the same thickness throughout; flat above, keeled on the back, glabrous, smooth, dull greyish-green, densely covered all over the upper surface and back with dark green dots that are very pellucid when held against the light, and a row of similar but larger dots confluent into a well-defined pellucid line all along the margins and keel. Pedicel much shorter than the leaves, about 4-5 lines long, without bracts. Calyx unequally 5-lobed; lobes ascending-spreading, 3-5 lines long and 3-3½ lines broad, ovate, acute, or obtuse with a short dorsal point, margins membranous, green, dotted. Corolla 1¼-1½ inch in diameter, expanding in bright sunshine, scarcely scented; petals more than 100, in about four series, all closely overlapping and widely spreading, the outer 7-8½ lines long, half a line broad, the inner shorter and narrower, all linear, acute, bright pink, fading into white at the very base. Stamens numerous, collected into a somewhat conical mass, with the outer 3-4 series more or less barren, lax and erect or spreading, and gradually passing into petals; filaments pink, whitish at the base; anthers yellow. Stigmas 7, in the flower examined, arising from the conical top of the ovary, 1½ line long, erect, stout, subulate, acute, greenish-yellow.—M. acutipetalum, N. E. Brown in *Kew Bulletin*, 1903, p. 407.

When nicely in flower this is a very charming plant, flowering in September. It is a native of the region of Johannesburg, in the Transvaal and was introduced into this country in May, 1903. Its fleshy roots are used by the natives in the preparation of a fermented liquor called Khadi, a kind of beer for which they have a great liking.

It is somewhat odd that this genus does not find a greater amount of favour among plant-lovers than at present seems to be the case, for many of them are exceedingly beautiful and free-flowering. A good selection of those that have the best flowers make a very charming show. All they require is plenty of sunlight and air, and very little water. If grown in a more or less shady situation or in a damp atmosphere they do not thrive, but if placed in a sunny situation, repotted only when absolutely necessary (not every year), grown in a sandy-clayey loam more or less mixed with stones or broken brick, and the watering pot withheld as much as possible, they yield an excellent return in beautiful flowers of bright shades of yellow, pink, orange, scarlet, red, magenta, and white. *N. E. Brown, Mary Place, The Avenue, Kew Gardens.*

TREES AND SHRUBS.

LIQUIDAMBAR STYRACIFLUA.

Now that we are passing through the period of the autumn colouring of trees attention may be directed to the splendid hues of Liquidambar styraciflua, variously described as crimson and orange, or deep purplish-red, mixed with orange and some leaves wholly of the latter colour. There is a shapely tree of it, about 50 feet high, with a diameter of 12 to 14 inches near the base, though it tapers but little to a considerable height, close to Holland House, Kensington, where Mr. Dixon, the gardener, continues to add recent introductions to this London collection of trees and

shrubs. The soil at Holland House is heavy and inclined to clay, otherwise the tree might have been larger. It grows well in a loamy and fairly moist, though not waterlogged, soil. The first specimen of this tree to be introduced was planted at Fulham Palace in 1681 by the celebrated George London, who was then gardener to Bishop Compton. The young tree was sent home to him by Banister, the Bishop's missionary collector. The two stations are not far apart. When Loudon published the first edition of his *Arboretum et Fruticetum Britannicum* in 1838, the tallest Liquidambar in the environs of London was 59 feet at Syon House. Possibly this is the same tree [illegible] measured in 1909. [illegible] stated to be the largest tree of the kind [illegible] I know [illegible] that two trees [illegible] this [illegible] are quite [illegible] *J.* [illegible]

The Week's Work.

THE KITCHEN GARDEN.

By F. Jordan, Gardener to Lieut.-Col. Spender Clay, M.P., Ford Manor, Lingfield, Surrey.

Seakale.—A number of strong [illegible] prepared for [illegible] trimmed [illegible] the [illegible] roots [illegible] long [illegible] roots [illegible] arrange a little fine soil about [illegible] them in a [illegible] house [illegible] in the spring. Strong crowns may [illegible] any warm, dark room. A Mushroom house [illegible] the night and day temperature ranges from [illegible] to 60° is very suitable. If the [illegible] forced in the open the ground [illegible] of decayed leaves, and [illegible] placed over them to [illegible] pots should be placed [illegible] covered with fallen tree leaves [illegible] not to make the heaps too [illegible] season.

Preparing for Frosts. [illegible] has [illegible] Cabbage, and Celery. [illegible] for protecting [illegible] vegetables that are [illegible] suffer from the effects of frost. [illegible] points of tender vegetables [illegible] amount of after protection [illegible] plants. A little [illegible] late Beet, Turnips and Celery [illegible] from a moderately sharp frost [illegible] of fresh leaves will also serve a similar purpose for various other crops. [illegible] should be protected with frames. Celery [illegible] on heavy soils; one of the best remedies [illegible] this is to plant in shallow trenches. A [illegible] supply of dry bracken and leaves should be kept in readiness for protecting all tender vegetables in the open.

Globe Artichokes.—Unless protected the crowns of Globe Artichokes are liable to be killed by a cold winter. Cut off all exhausted flower stems and dead and worthless leaves. Ashes mounded around the stems are generally an efficient protection, and in Northern districts these may be supplemented with dry bracken to the depth of 12 inches, the leaves being well enclosed, but not smothered by the protecting material.

THE ORCHID HOUSES.

By J. Collier, Gardener to Sir Jeremiah Colman, Bart., Gatton Park, Reigate.

Trichopilia.—Trichopilias flower at various times of the year, and for that reason their repotting is done at different periods; the best time is just when roots develop from the base of the new pseudo-bulbs. T. suavis is the handsomest species, and is most frequently grown, but T. fragrans and its variety alba, T. coccinea, T. tortilis, and T. sanguinolenta are all worthy of cultivation. Most of these plants grow best in rather deep Orchid pans suspended near to the roof-glass in a house having an intermediate temperature. T. fragrans thrives best during the summer on the stage in the cool Odontoglossum house. Whilst growing actively the plants should be afforded a plentiful supply of water at the roots, but when the season's growth is finished they should receive less moisture and more air to ripen them.

Dendrobium.—The majority of plants of D. Phalaenopsis [illegible] and its varieties [illegible] and the flowers may be kept [illegible] for several weeks [illegible] dry atmosphere and intermediate temperature. The flowering must not be [illegible] of the plants [illegible] the spikes should be removed. After [illegible] have passed out of flower they should be placed near the roof-glass in a house where the temperature does not fall below [illegible]. During the season of rest the roots should be afforded only sufficient water to keep the pseudo-bulbs plump. Plants of D. [illegible] should after passing out of flower, receive similar treatment. [illegible] Dendrobiums, such as D. [illegible], D. [illegible], D. superbiens [illegible] [illegible] temperature [illegible] sufficient water [illegible] the pseudo-bulbs [illegible] temperature during the resting season [illegible] will become stunted [illegible].

THE HARDY FRUIT GARDEN.

By [illegible] Hudson, Head Gardener at Gunnersbury House, Acton, W.

The Home Orchard.—Those [illegible] ground, either [illegible] or pasture, should [illegible] standard trees of Apples, Pears and Plums to form an [illegible] standard Pear trees [illegible] Williams' Bon Chrétien, Louise Bonne of Jersey, Beurré [illegible], Beurré Superfin, Beurré [illegible], Marie Louise [illegible] Doyenné du Comice [illegible] Pitmaston Duchess [illegible] Gunnersbury House [illegible] Early Prolific [illegible] most reliable cropper [illegible] second early variety. Czar comes in at the same time, but is quite distinct, and [illegible] fruits of [illegible] are suitable for dessert. Blue Rock is a good early dessert variety; Belle de Louvain I have found [illegible] Monarch is one of the best late cooking Plums, and not to be despised for dessert. Prince of Wales is earlier than the last named. A [illegible] early October Plum [illegible] Autumn Beauty [illegible] Belle de Septembre [illegible] latest [illegible] as an October variety. President is to be commended, and the fruits [illegible] Morello Cherries are profitable as standards in nearly every district, and standard trees give but little trouble. [illegible] trees trained to [illegible] wall and thus afford a little extended season. Where canker is troublesome with this Cherry [illegible] the experiment of planting standards should be tried. Damsons and Bullaces are best grown as standards, and varieties that thrive the best in the particular district of the garden should be selected. Both the Merryweather and Chester are good Damsons, whilst Langley Bullace is also an excellent choice, but being a strong grower the roots should not receive too generous treatment. In planting a new orchard include a few Medlars. The Royal variety should be chosen in preference to the Dutch as it is better flavoured.

FRUITS UNDER GLASS.

By W. J. Guise, Gardener to Mrs. Dempster, Keele Hall, Newcastle, Staffordshire.

The Orchard House.—Although the trees established in borders are not yet defoliated, the wood is well matured, and they are in excellent condition for lifting, renovating, or root pruning. Young trees usually make excessive growth after the second or third year of planting; these should be lifted, the strong roots shortened, and then replanted. The work should be done directly the fruit is gathered and all superfluous wood has been removed. It may not be necessary to root-prune every tree, but persistent gross growth with little or no fruit is a sure indication that lifting or root pruning is necessary. I refer to Peaches, Plums, Cherries, Apricots, and other fruit trees that are grown in a mixed orchard house. Where the borders are narrow and of small size some of the old soil needs to be removed after a time and replaced with fresh loam. Carefully preserve the young, fibrous roots, and, after shortening the strong ones which will eventually form numbers of small fibres, gradually fill in with a compost of rich, fibrous loam and crushed mortar rubble. Carefully spread out the young roots in layers, with their ends raised slightly towards the surface. Make the soil firm with a rammer as the work proceeds. Older trees with unlimited border space that continue to make gross wood should be root pruned. Close pruning of the branches only causes the tree to make stronger growth. First remove the old mulching material, then take out a trench some distance from, and half way around, the stem. Work the soil from under the ball, and, after cutting back all strong roots, fill the trench with two-thirds of the old and one third of new compost. Keep all fibrous roots near the surface, and well ram the soil, or the trees will sink considerably when the other half of the roots are pruned. The border should be quite moist before it is disturbed, or many of the young fibrous roots may be destroyed. After the work of root pruning is completed, give each tree sufficient water to settle the soil about the roots.

PLANTS UNDER GLASS.

By E. Harriss, Gardener to Lady Wantage, Lockinge Park, Berkshire.

Fuchsia.—Cuttings of Fuchsias which were rooted in August should be shifted into larger pots. For the next few months the plants should be grown gently in a house having a moderate temperature. Place them near the roof-glass to encourage sturdy growth, and when sharp frost occurs cover the glass with garden mats. Old plants which have finished flowering should be rested by gradually reducing the supply of water at the roots. The pots may then be placed on their sides beneath a stage in a cool house, and the plants stored for the winter.

Euphorbia jacquiniaeflora.—It is usual to grow this plant in a fairly high temperature, but with careful management in regard to watering and ventilating it may be grown quite successfully without the use of excessive fire-heat. The inflorescences are developing, and the atmosphere of the house should be kept dry. Admit a little air through the top ventilators whenever the weather is favourable, and grow the plants near the roof-glass.

Primula obconica.—This Primula is one of the most useful greenhouse plants for autumn and winter flowering, but owing to the poisonous nature of its leaves its usefulness is somewhat restricted. When in flower, use a very little fire-heat, only sufficient to keep the atmosphere dry. When not used for decorative purposes the plants should be placed in a position where they cannot easily be touched by those walking past them.

Begonia corallina.—Although this Begonia may be grown successfully in pots, it is never so effective as when trained under the roof of a greenhouse or conservatory. For this purpose it should be planted in a permanent border, and the soil should be well drained. The flowers of Begonia corallina are useful for table decorations, and a batch of pot plants should be grown annually for this purpose. Cuttings will root freely at almost any time of year. A compost formed of loam, peat, leaf-mould, and crushed mortar rubble is suitable.

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AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 45.7°

ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, *Wednesday*, October 30, 10 a.m.: Bar 30.1, temp. 57°. Weather—Sunshine.

APPOINTMENTS FOR NOVEMBER.

TUESDAY, NOVEMBER 5—
Roy. Hort. Soc. Comm. meet. National Chrys. Soc. Annual Ex. at Drill Hall, Westminster. Hort. Club luncheon at 2. Whitehall Court at 1.15 p.m.

THURSDAY, NOVEMBER 7—
West Ham and District Hort. and Chrys. Soc. Ex. at the Conference Hall, West Ham Lane, Stratford (3 days).

FRIDAY, NOVEMBER 8—
Corn Exchange An. Chrys. and Fruit Show.

MONDAY, NOVEMBER 18—
National Chrys. Soc. Floral Com. meet., Essex Hall, Essex Street, Strand.

TUESDAY, NOVEMBER 19—
Royal Hort. Soc. Comms. meet.

Silver Leaf. The reference made in our issue of October 12 to the serious condition of Plum orchards due to Silver Leaf disease needs supplementing and emphasising, for there is no doubt but that this pernicious disease is increasing at a rapid rate. Not only is this the case, but it is also spreading to Apple trees, and although its progress on the Apple is less swift than on the Plum, it is probably only a matter of time for the fungus (Stereum purpureum), which is the agent of the disease, to make itself as fully and as disastrously at home on this fruit tree as it has done on the Plum. For it is to be remembered that parasitic fungi have a considerable power of adaptation, and can gradually so organise their attack as to break down defences which for a time sufficed to offer a strong resistance to attack.

One factor which we are convinced from personal observation contributes to the spread of the disease is the slight regard which is often paid to the disease in its early stage. This perhaps is due more than anything else to the curious aspect of the silvered leaves. In that stage there is nothing to suggest the deadly nature of the attack; and, moreover, the next stage, in which the branch dies back, is often not associated in the mind of the grower with the first, silvery stage. If he cuts away the dead branch at all, the grower often fails to cut it back far enough, and hence leaves the fungus to renew its attack. Even in the case of a dead tree which is cut down, growers often omit to grub up the roots, and hence, and particularly if the stock is the Mussel Plum, suckers are thrown up, every one of which is apt to be silvered, indicating that all unwittingly the grower has left a source of infection, from which the disease spreads to other trees. Nothing short of a crusade against this pest will suffice to rid our orchards and gardens of this pest, and, much as we dislike "Orders" and scheduling of pests, we are inclined to believe that steps in this direction will have to be taken before the disease can be brought under control. In the meantime, much can be done by spreading information as to the symptoms and mode of treatment of Silver Leaf disease. For of all common maladies of fruit trees, it is the easiest to recognise, and drastic treatment in the early stage, when the disease is confined to a single branch, may often save the tree. Once the infection is general throughout the branches, no remedy avails, and the only course is to leave the tree no longer to cumber the ground. Vigilance should be exercised, not only with respect to Plum and Apple trees, but also to other plants, since this disease is known to attack many different species common to gardens—among others, the Peach and Laburnum. Wherever found, it should be treated surgically, for there is no known medical treatment which can be counted upon to effect a cure.

National Chrysanthemum Society. — The Annual Floral Meeting of this Society, with competitions, will be held at the London Scottish Drill Hall, Westminster, on Tuesday, November 5, in conjunction with the meeting of the Royal Horticultural Society. We are asked to state that there is a misprint on the N.C.S. members' passes, and the date given thereon as November 8 should read November 5.

Ripe Plums on Growth of the Current Season. Mr D. D. ROBERTSON, Ashridge Gardens, Berkhamsted, Hertfordshire, sends branches of Victoria Plum bearing ripe fruits on the new shoots of the current year. A second crop of flowers is not unusual in the case of Apples, Pears, and Plums, but it is rare for the fruits that follow these abnormal blossoms to develop and ripen as in the case of those sent by Mr ROBERTSON.

Rev. J. H. Pemberton.—The many friends of the Rev. J. H. PEMBERTON will learn with deepest regret of the death of his sister, Miss HELENA PEMBERTON, which occurred at the Round House, Havering, on the 26th ult.

Spread of the Cotton Boll Weevil in the United States. From *The Agricultural News*, of Barbados, we learn that the Mexican Cotton Boll Weevil is spreading through the cotton growing districts of the Southern United States of America at the rate of 15,000 square miles per year. Infestation was first noticed in Georgia in 1915, and in 1917 the infested area was estimated at 44,500 square miles; in Florida the pest appeared in 1916, and spread so rapidly that in 1917 26,000 square miles were infested. Within 25 years the weevil has spread over nearly 500,000 square miles.

Control of the Prices and Distribution of Potatos.—On and after November 1 the whole of the Potato crop in England and Wales will be under the control of the Food Controller. Prices have been fixed by a Commission jointly appointed by the Food Controller and the Board of Agriculture, and these prices per ton to producers, free on rail, will vary for Grade I varieties from £5 15s. in the blacklands of Cambridge and Huntingdonshire to £8 in Sussex. But although the prices vary so much so far as the producer is concerned, there is a fixed general price which retailers will be allowed to sell at, i.e., 1½d. per lb. for Grade I varieties, and 1d. per lb. for all other varieties until the end of December; and 1½d. per lb. and 1½d. per lb. respectively in January. Retailers will be able to purchase their supplies at the fixed price of £9 per ton for Grade I Potatos, and £7 per ton for other sorts, such prices to include delivery to the retailers' nearest railway station. Wholesalers will buy at varying rates from the producers and sell to retailers at a flat rate, and they will act as agents to the Ministry of Food, and account to the Ministry for any difference between the buying and the selling price, after deducting commission (provisionally fixed at 7s. 6d. per ton) and necessary charges. To secure proper distribution England and Wales have been divided into twenty-one areas, eleven of which are "deficit" zones and twelve "surplus" zones; and through the Zonal Committees of the surplus zones, supplies of Potatos will be exported to the "deficit" zones, each of which is under the care of a Potato Control Committee. Growers may sell to registered wholesalers within their own zone, but to no one outside it. There are other minor points in connection with the Control of Potatos, but we need not detail them, as a leaflet for the guidance of retailers may be obtained on application to any Food Office, and a leaflet for growers and wholesalers may be obtained from the Ministry of Food or from the Zonal Committees. We may add, however, that Grade I Potatos are King Edward VII., Golden Wonder, What's Wanted, Langworthy, and Main Crop varieties. All others are in Grade 2.

The South African Fruit Industry.—At a recent meeting of the Western Province fruit growers in Capetown it was decided to form a co-operative selling society in the fruit industry. The proposal consists of the formation of a limited liability company, with a capital of £5,000, and fruit growers who are interested are asked to subscribe the capital. The object of this society, it is stated, will be to raise the standard of fruit placed on the markets. It is estimated that the organisation will be in a position to handle 40,000 tons of fruit in the course of a season, and this output, according to one member, is expected in the next fruit season. *Board of Trade Journal.*

Timber Trees for the Red Cross Funds.—An appeal is being made to owners of timbered estates in England and Wales for the gift of a single timber tree to be sold for Red Cross Funds. A fine Oak from Windsor Park has been promised by His Majesty the KING, and specimens have been offered or given by Lord CURZON, Lord CLIFDEN, Lord BOSTON, Lord GLENCONNER, Lord LILFORD, Lord POWIS, Lord REDESDALE, Col. B. RAYMONDSON, and Col. STOPFORD SACKVILLE. Messrs. RICHARDSON, timber surveyors, of Stamford, Lincs, have undertaken voluntarily the organisation of this scheme, and the felling and removal of the trees will involve no cost to the donors. It is hoped that very many trees will be donated, and as the Timber Controller has agreed to waive the "Fixed Price Order," a goodly sum should be realised.

War Items.—We learn with very deep regret of the death of Mr. JAMES GARDNER, gardener at Batsford, Gloucestershire. Mr. GARDNER was killed in action on the 6th ult., while serving with his regiment in Italy. His father was gardener to the late Sir JOHN ASTLEY, at Elsham Hall, for upwards of forty years, but has retired from active work. The late Mr. GARDNER started his business career in a bank at Huddersfield, but, disliking the confinement and monotony of the work, he soon tired of it, and elected to follow in his father's footsteps as a gardener. He was fortunate in having Mr. EDWIN BECKETT for his first master, teacher, and friend. No pupil could have had a better teacher, and few masters could have had a more apt and keener pupil. He left Aldenham after about three years, and entered on new duties at Eaton Hall Gardens, Chester. Here he came

under the tuition and discipline of Mr. N. F. BARNES. His advance was rapid and his success phenomenal, due, as he frequently and gratefully acknowledged, to the good training he received under Mr. BUCKELL and Mr. BARNES. After staying at Eaton for a few years he was appointed foreman to Mr. MULLINS, at Eastnor Castle Gardens. Here a misfortune far-reaching for him befell him. No garden is more renowned for fruit growing, and especially the cultivation of Grapes, than Eastnor Castle. From Eastnor he secured the position of gardener to the late Lord REDESDALE, at Batsford Park, Gloucestershire. Mr. GARDNER was only 24 years of age when he entered on his duties at Batsford. This position he held until he joined the Army about two years ago. He was one of the six who joined the Forces, content to take the rough and the smooth together with a light heart, making the best of the position cheerfully. He thoroughly fought, was helping wounded to the dressing station, when Lieut. BATESON and his party were caught in a heavy barrage, and he was wounded; but though wounded himself he went forward to the dressing station and brought back help for his men, thus showing splendid courage and self-sacrifice."

Driver H. BUZZARD, second son of Mr. H. G. BUZZARD, West Bark House Gardens, Heaton Mersey, was killed by a shell fired by the enemy on October 12. Prior to joining the Forces he was 22 years of age, and before coming was employed in the plant department at Eaton Hall, Chester. Much sympathy will be extended to his parents and his twin brother, Private G. BUZZARD, who had received wounds in France on April 14 last.

Pte. REGINALD MARTIN, only son of Mr. C. MARTIN, County Horticultural Instructor for the Isle of Wight, died of gas poisoning in

CELMISIA HOLOSERICEA.

THE genus Celmisia consists of 45 species, nearly all, with the exception of one, are natives of New Zealand. In this country they form one of the chief features of the mountain flora, the species usually forming a large proportion of the vegetation, especially in the Southern Island, where the mountain slopes and valleys are said to be whitened for miles by the abundance of the large Daisy-like flowers. All the plants are perennials, dwarf in growth, forming tufts of strap-shaped leaves of various sizes, either on short decumbent stems or without stems. Some species form wide, mound-like masses, whilst others grow as single small tufts. In this country, with the exception of one or two species, including *C. holosericea* illustrated in fig. 69, the cultivation of Celmisia has not been very

Photograph by C. P. Raffill

FIG. 68.—CELMISIA HOLOSERICEA: FLOWERS WHITE.

enjoyed his stay in Italy. Many of its beautiful gardens he was privileged to see and to enjoy, including La Mortola. With his death comes an untimely end to a promising career as a gardener and a good citizen.

—We have learned with very great regret of the death in action, on the 14th ult., of 2nd Lieut. JOHN BATESON, eldest son of Prof. W. BATESON, F.R.S., head of the John Innes Horticultural Institute, Merton, Surrey. Lieut. BATESON was educated at Charterhouse School and won an exhibition at St. John's College, Cambridge. He joined the Royal Field Artillery during the earlier part of the war, and in July last was awarded the Military Cross for conspicuous bravery. Although his battery was being heavily shelled on that occasion he twice went through an intense barrage to find a medical officer and assist the wounded; the same France early in October. He joined the Civil Service Rifles on the outbreak of war, was stationed in Ireland during the rebellion, and afterwards served on the Western Front and in Salonica, and was then transferred to Palestine where in the victorious advance to Jerusalem he won the Military Medal for conspicuous gallantry as a stretcher-bearer under heavy fire. Pte. MARTIN was only 24 years of age.

The many friends of Mr. and Mrs. ROGERS, Rendlesham Gardens, Woodbridge, will learn with regret that Pte. T. W. ROGERS, their only surviving child, was killed in France on October 12, aged 20. Previous to joining the Army in November, 1915, Private ROGERS served for two years in the gardens at Madley Manor, Farnborough, Hampshire, under Mr. ALLEN. He was for nine years engaged with his father in the gardens at Rendlesham.

successful. Although fresh seeds germinate freely the seedlings are somewhat difficult to manage, being very liable to damp off in their early stages. When first tried at Kew in quantity they were grown in a cold, span-roofed frame, and did remarkably well. Afterwards they were grown in a shady recess, where they flourished for a time and then began to fail. It may be that they are naturally short lived.

The specimen of *C. holosericea* illustrated in fig. 69 was growing in the rock garden at Kew on the shady side of Rhododendrons, having been moved there as a large plant from another position. It was planted in loose, well-drained soil consisting of fibrous loam, a little peat, and plenty of leaf-soil. It grew well for a few years, and then suddenly died after a severe winter. Young plants, in both shady and sunny positions, are now growing freely, and

promise to make good specimens. Many other species are in cultivation, one of which, *C. speciabilis*, was illustrated in *Gard. Chron.*, Feb. 9 last, p. 51. This plant is growing on a sunny slope and is apparently quite at home in this situation, though it received no protection during the winter. Species such as *C. Browni*, *C. Munroi*, and *C. coccinea* have been tried in shady positions, but do not make much progress, apparently suffering badly from the damp, foggy climate of our winters. It is intended to plant Celmisias at Kew in an open, sunny place, to see if they will succeed better in such a situation. *W. J.*

ON INCREASED FOOD PRODUCTION.

STORING ONIONS

This season I have adopted a simple plan for storing the Onion crop which I think is worthy of commendation to any who have a length of blank wall in a shed or loft. Essentially it is merely an application of the structure I described and figured a couple of years ago (*Gard. Chron.*, Sept. 3, 1916, p. 120, fig. 49). Some half dozen or so sticks, say, 9 feet long, stick according to requirements, and for each length of the trellis three stout stakes about 5 or 6 feet long are required. The only other need is three lengths of cord. The three stakes are leant against the wall, near the upper ends of each a piece of cord is attached, preferably by a rolling hitch, by which the uppermost stick is fastened horizontally; commencing with the cord the other sticks are hitched on below at a few inches distance from one another. The rack is then complete; there is no need to fix the supporting stakes in any way, as the weight of the Onions keeps the whole in place. The Onions are then hung on the horizontal bars in pairs by tying the leafage end to end with a half knot or twist. If the Onions have already been ripened out of doors on the similar support, one only needs to bring them in their pairs, and hang them on the trellis indoors. I know of no other method whereby the crop can be so quickly and satisfactorily accommodated with free ventilation for each bulb; moreover, the materials remain good for other purposes next season. *H. E. D.*

POTATO YIELDS COMPETITIONS

At Heston, near Hounslow, Middlesex, Potato competitions have been held each season for many years past. This year prizes were offered for the heaviest crops from 14 sets planted in a row 21 feet long and 2 feet 6 inches wide. Mr. F. Weston, Merivale Nurseries, won the premier award with 84 lbs., and Mr. S. A. Cragg was placed second with 81½ lbs.; other competitors followed with 76 lbs., 73 lbs., 69 lbs., 69 lbs., 65½ lbs., 55 lbs., 43 lbs., 36 lbs., 36 lbs., 35 lbs., 35 lbs., 35½ lbs. and 32 lbs. respectively, giving a total weight of 760½ lbs., or an average of 54·3 lbs. per 21-feet row, as compared with an average of 51·5 lbs. in 1917, 43 lbs. in 1916 and 53 lbs. in 1915.

Prizes were also offered for the heaviest crop of Onions grown in a 21-feet row, and here again Mr. F. Weston led; his crop weighed 35 lbs., the other competitors following with 31½ lbs., 26 lbs., 25 lbs., 23½ lbs., 20 lbs., 19½ lbs., 17 lbs., and 16 lbs. respectively. The average crop per row was 23·5 lbs.

POTATO YIELDS

At Potato competitions at Bonnesham, Berkshire, 14 rows yielded 10 cwt. 2 qrs. 21 lbs. 6½ oz. from 12 lbs. of seed. Each competitor received 1 lb. of seed tubers and was not allowed to plant more than 50 sets. The crop of the first nine in order of merit weighed no less than 6½ cwt. The first in order of merit was Mr. W. Hewett, Park Place, who from 25 sets lifted 162½ lbs.; 2nd, Mr. W. H. Chesterton, gardener to Captain Eyre, Wilmington Park, 125 lbs. 5 oz. from 50 sets; 3rd, James Stephens, gardener to Mr. W. H. Barber, Culham Court, 120 lbs., from 50 sets.

In the competition for the six heaviest tubers the awards were as follows: 1st, W. Tugwood, 11 lbs.; 2nd, W. Wallis, 8 lbs.; 3rd, W. Ward, 7 lbs. 15 oz.; 4th, J. Woodyatt, 7 lbs. 3½ oz.

MARKETING SURPLUS PRODUCE.

NEGOTIATIONS are on foot with a view to the County Marketing Societies in the various parts of the country supplying the Navy and Army Canteen Board with some of the latter's requirements in the matter of vegetables. In certain areas also it seems likely that the County Marketing Societies will utilise the existing industrial co-operative movement as part of their machinery. For example, in East Suffolk the Ipswich Industrial Co-operative Society, which has numerous country branches, will probably collect surplus produce at its depots for sale to members of the society in the town of Ipswich. Some such arrangement as this will economise in the cost of collection, transport, and general handling.

In Nottinghamshire a County Marketing Society is being formed with a capital of £1,000 (10s. shares), and about £300 has been already

THE LATE PRIVATE JAMES GARDNER.

(See p. 179.)

promised. A market organiser has been appointed, and the County Federation of Allotment Societies, with a membership of 7,000, is interesting itself in the scheme.

HOME CORRESPONDENCE.

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

American Blight (see pp. 50, 77, 92, 142).—The remarks of Mr. Molyneux and *R. C., Wilts*, prompt me to ask if certain kinds of Apple trees are immune from this pest which is rapidly spreading in many places. In this district some trees are badly infected, whilst others, viz., Keswick Codlin and Newtown Pippin, planted about the same time and growing in close proximity are quite free. In some old gardens there are many barren fruit trees which for years have only been breeding places for this pest, and in these days of fuel shortage would be better burned. *John Bates, Wrattord, Stow.*

Apples for Grass Orchards (see p. 154).—Considering the long experience of Mr. E. Molyneux, and his practical knowledge of fruit culture, I am somewhat surprised at the list of varieties of Apples he recommends for planting in grass orchards. Amongst the culinary Apples mentioned, the one I take exception to is Dumelow's Seedling. Wellington, for, while it is an excellent keeper and a fast rate cropper, the tree autumnalises as a bad grower, and except in favourable conditions is very liable to canker. I write with some knowledge of grass orchards in the West of England, and know of cases in which Wellington was planted by the side of Bramley's Seedling twenty years ago. The latter are fine spreading trees to-day, and have borne splendid crops of fruit, while the former are not much bigger than when they were planted. May I ask why Mr. Molyneux left Newton Wonder out of his selected list, as this is unquestionably one of the finest orchard Apples in cultivation, and it is being planted now more extensively in the West Country than Bramley's Seedling? In selecting varieties of Apples for planting in grass orchards, it is of the utmost importance, quite apart from the character of the fruit, that the tree should be a good grower, and no matter how good an Apple may be, unless it has capacity for making a large, vigorous tree, it is best left out of a grass orchard. For the reason here explained, I should not have included Worcester Pearmain in a short list of dessert varieties for grass orchards. *G. H. Hollingworth, Agricultural Organiser, County Education Office, Shire Hall, Gloucester.*

Mr. George Paul, V.M.H.—I was pleased to meet Mr. Paul at the recent Fruit Show of the R.H.S., and congratulate him on his golden wedding, which he and "his people" had been celebrating the previous day. I read the congratulatory notice in *Gard. Chron.*, and remembered that Reynolds Hole said something about my friend in his great book on Roses published in 1874. Here is what he said: "Mr. George Paul, 'the hero of a hundred fights,' advises 'that in planting the ground should be deeply trenched, and well-rotted manure be plentifully added. If the soil be old garden soil, add good loam, rich and yellow; choose a dry day for the operation, and leave the surface loose. Stake all standards, and mulch with litter to keep the roots from frost.' Well does the young champion sustain the ancient honours of his house, and none of his rivals grudge him his victory, because he never murmurs in defeat." This is worthy of repetition, because it is as true to-day as when it was written over 40 years ago! *W., Cuthbertson.*

Grow More Fruit (see p. 140).—A good plan for increasing the supply of fruit is to remove the large number of Privet hedges which partition the back gardens in many of the London suburbs, and in their place insert a few stout posts, 3½ feet long and 6 inches in diameter at the bottom, connected by No. 12 galvanised wire with a raddisent or winder at one end of each length, and a few galvanised staples. The posts should stand 6½ feet above the ground level and be fixed 12 feet apart; six wires can then be fixed 1 foot apart, with the lower strand 1 foot above the ground. Most kinds of hardy fruits may be grown against such fences, according to local circumstances; in most instances horizontally trained Apples would do well, and good trees would give a fair crop of fruit the second year after planting. The labour required would not be half of that necessary to keep the useless Privet in order, and a large addition to the fruit supply would be obtained without any decrease in the amount of ground used for growing vegetables. *W. H. Davis, Westdean, Hook, near Salisbury.*

September Rainfall.—*Market Grower* infers that September, 1918, was one of the wettest Septembers on record. Here, in South Hants, 7.52 inches of rain were registered, whereas in 1896 7.50 inches fell, and but seven dry days were recorded during the month. Records taken here over a period of twenty years show that the heaviest rainfall during the month of September was on the 24th, 1915, when 2.85 inches fell. As showing how closely alike is the rainfall in two adjoining counties, our figures during September, 1912, were 5.33 inches, while those in *Market Growers* district were 5.48 inches. During September, 1910, but 0.15 inch fell; in September, 1895, 0.42 inch, and in 1890 the record was 0.37 inch. During the twenty years total the total rainfall during September was 57.38 inches, an average of 2.55 inches. *E. Molyneux.*

Pruning Clematis.—I am in a state of confusion as to the pruning of the various sorts of Clematis, and the more works of reference I consult the more muddled I become. The following will illustrate my point. On p. 53 of *Teaching Plants*, by W. Watson, I read that the *C. lanuginosa* flowers "successionally on . . . summer shoots from July to October." On p. 55, that the Jackmanii sorts flower "successionally on summer shoots from July to October." Both, therefore, would appear to be of identical flowering habit. On p. 52 we are told that the pruning of lanuginosa forms "should take place in the months of February or March." Further down on the same page we are told that Jack-

manii, "being summer and autumn bloomers, flowering on the young or summer shoots . . . should be pruned by cutting back the summer growth each season," say in November." [Evidently this should read March.—EDS.] So far as I can make out, there are four principal types of Clematis which flower on the old or ripened wood, viz., Calycinae, Anemoniflorae, Azurae, and Floridae, and four which flower on the new or summer shoots, viz., Lanuginosae, Viticellae, Jackmanii and Paniculatae. I may also mention that on p. 49 of *Climbing Plants* it is stated that *C. montana rubens* flowers in May, whilst on p. 52 it is described as autumn flowering. *Herbert Allen.* [The type flowers in May, the variety *rubens* several weeks later, but both may produce occasional blooms in autumn.—EDS.]

Planting by Worms.—I have been much interested in the earth-worms in my small garden in South Kensington. Three weeks ago I clipped off some Pelargonium (Geranium) leaf stalks, about 5 inches long. In a day or two I was surprised to find one of them standing upright in the flower bed, as it planted there. More than that, in a few days more the buds expanded to a perceptible extent. To-day, after three weeks, the stalk is still erect, fleshy, and the buds firm and fresh-looking, reddened. No doubt the worm, after beginning interment found the stem to be not yet quite without the elements of life, and the leaf to be not eatable or fit for storage purposes. At a more favourable season no doubt the buds would have fully expanded. Twigs cut from my hedge I have found "planted" in exactly similar way and left thus for the same reason, as they continued green, with leaves unaffected, for some time. The butt end is always drawn-in first. No doubt these twigs, if planted in this way in the proper season, would have rooted. *Thos. S. Carson.*

SOCIETIES.

NATIONAL CARNATION.

OCTOBER 19.—The annual general meeting of the National Carnation Society, Southern Section, was held in the Library of the Royal Horticultural Society on Saturday, October 19. The report and statement of accounts were submitted, the latter showing a balance in hand of over £30.

The annual floral meeting for 1919 was fixed for July 15, in conjunction with the fortnightly meeting of the Royal Horticultural Society, in the Drill Hall, Buckingham Gate, Westminster. The hon. secretary is Mr. J. J. Keen, 54, The Avenue, Southampton.

SOUTHAMPTON ROYAL HORTICULTURAL

OCTOBER 15 16.—A food production section was held by the Southampton Royal Horticultural Society on the foregoing dates on the Royal Pier, Southampton.

The vegetables in all classes made a good and amateurs reached a high standard of excellence. Potatoes, Onions and Cabbages being most prominent. The Royal Horticultural Society sent a special deputation to the exhibition with power to award medals, and the number of such honours was unusually large.

The R.H.S. Gold Medal was awarded to Messrs. Toogood and Sons for a display of vegetables, and W. H. Mayes, Esq., Sommon Park, for Mr. G. Ellwood was awarded two Silver and two Bronze Medals for collection of fruit, Grapes, a collection of vegetables, and Onions respectively. The Duke of Wellington was awarded a Silver Medal for a collection of fruit, which also won the Victoria Memorial Trophy, and a Silver-gilt Medal for a display of vegetables; and to Ellis, Lord Swaythling was awarded a Silver Medal for a collection of fruit. Other awards of the R.H.S. were as follows:—

Mr. H. Broom, Barton Peveril, Silver-gilt and two Bronze Medals for collections of vegetables. Mr. S. F. White, Eastbrigh, three Bronze Medals for collections of vegetables; Mr. W. Smith, allotment holder, Rockstone Road, Bronze Medals for a collection of vegetables and dish of Potatos respectively; Mr. F. M. Voules, Sholing, a Silver-gilt Medal for vegetables; Mr. J. Liddell, of Shirley, Bronze Medal for a dish of culinary Apples; Mr. D. Wilton, Bronze Medal for culinary Apples; Mr. E. Palmer, Silver-gilt Medal for a collection of vegetables; and Mr. J. Enticott, Eastleigh, Bronze Medal for a collection of vegetables.

The Challenge Cup offered for the highest number of points was won by Mr. S. T. White; Mrs. Tofield, of Westend, secured the Mazawattee Cup offered for the best Chrysanthemums.

There was an excellent display of non-competitive exhibits, including a particularly instructive model of wheat, as well as a display of insect pests by the R.H.S. A Gold Medal was awarded to Messrs. Laxmans for a display of hardy shrubs. A Silver-gilt Medal was awarded to the Gas Company for bottled fruit and dried vegetables. Mr. W. C. Robbins, Bitterne Park, displayed the results of trial cultivation of various varieties of Potatos, and was given an Award of Merit.

UNITED HORTICULTURAL BENEFIT AND PROVIDENT.

OCTOBER 14.—The fortnightly meeting of this Society was held in the R.H.S. Hall on the 14th inst., Mr. C. H. Curtis presiding. One new member was elected. One member was allowed to withdraw the sum of £18 19s. 11d. from his lapsed account. The Army forms of the late Lance-Sergt. H. Hawkes, Pte. N. V. Heath, and Lance-Corporal F. G. Wills, were received, and also the death certificates of two other deceased members, and the sum of £75 0s. 0d. was passed for payment to their respective nominees. The sick pay for the month on the ordinary side amounted to £52 7s., and on the Sick section to £29 17s. 6d., while the maternity benefits came to £7 10s. One member was assisted from the Orphan Fund, and one member was relieved from Distress Fund for life.

CROPS AND STOCK ON THE HOME FARM.

BASIC SLAG ON GRASS.

[illegible] to operate upon [illegible] pastures and meadows and farmyard manure [illegible] will [illegible] basic slag at the rate of 2 cwts. per acre. These [illegible] were carried out in accordance with [illegible] have since been [illegible] results [illegible] various seasons [illegible] speaking in general terms. Even on the poorest [illegible] a dressing of basic slag, followed in the autumn, as it should be, affects the growth of the grass and induces clovers of various kinds to spring up where clovers were not known before, is a mystery. My view is that the soil is getting more to the acid and the basic slag corrects the constituent necessary for the germination. In sandy soil basic slag does not act so quickly. Where there is much clover, moles love slag to eat, great assistance to the moles, additional sweet herbage, but it is well to allow the sheep to graze on the field for at least six weeks after the slag is applied.

Pastures regularly used for cows or horses, where continual feeding is necessary, can be improved by the use of basic slag and agricultural salt in alternate years.

CABBAGES.

One must [illegible] to refer to the [illegible] owing to the great value for feeding purposes especially [illegible] these are many concentrated foods are unobtainable. The 6 degrees of frost on Oct. 8 completely spoilt the Maize that remained, during the Cabbage crop doubly valuable to the cowkeeper as a means of increasing not only the quantity but the quality of the milk. Breeding sows have [illegible] on Cabbages and [illegible] they pick up in the fields, as meal or bran is almost out of the question for them. With the sudden absence of the Maize, which [illegible] a valuable green food for cows, I do not [illegible] to advise [illegible] Cabbages now that the grass has deteriorated in quality owing to heavy rains. Early Drumhead Cabbages sown on April 15, and planted 2 feet apart are yielding as much as 30 tons per acre. In any of the heads weighing 12 lbs. each. The ground was never hoed, and no artificial stimulant was given, but 15 tons of farmyard manure was ploughed in during the autumn. I mention these points to show how easily Cabbages are produced. The Late Drumhead Cabbages are now hearting, and will last until well into February. I shall hesitate to grow Maize in future, as early frosts in October have killed the crop two years in succession.

HEDGES.

The present is a suitable time to cut down, trim, and trim hedges, as the current season's growth has not yet fully matured, and will cut [illegible] now than after Christmas. High hedges round arable fields are a mistake, as is [illegible] the state of the corn near the hedges [illegible] so many weeks owing to the difficulty of the soil and to drying quickly after showers, or even heavy dews. Apart from the difficulty of drying the corn or hay, high hedges harbour sparrows, which are increasingly troublesome, and do much damage to all cereal crops, not only as the grain is filling out and ripening, but [illegible] after it is cut.

In the case of pasture fields hedges 6 feet high provide valuable shelter for cattle, but in the ordinary arable fields, where cereals, roots, and hay only are grown, I do not favour a hedge more than 4 yard high at the most, which is sufficient to prevent cattle or sheep, when driven along the road, breaking through into the fields. Much valuable space is often occupied by tall, wide hedges; the ground would be much better occupied with crops. Where an overgrown hedge of any kind exists, and it has become thin at the base, and is not immediately required as a protection against cattle, it is better cut down to within 6 inches of soil; from this base stout, [illegible] shoots will spring, and at these are cut back in the autumn to within 1 foot, a thick, useful hedge will be obtained again quickly. Where however, a fence is required at once, it is better to "lay the hedge by splaying the stout portions a foot high; simply take off a slice a few inches long, give that portion a crack across so that the piece will bend and lay it in any position required. Quite a thick, stout hedge may be made thus, and with subsequent growth from the laid in portions the hedge will be quite [illegible] proof. All this, in addition to trimming and making up the banks and clearing the watercourses is work that can be carried out during the winter.

I fear too little attention is paid to ditches and drains around fields; if these details were regularly attended to we should hear fewer complaints about the unsuitability of certain fields for arable culture.

Overhanging boughs of trees in hedges around fields should be attended to; where these extend too freely the various crops are reduced in bulk as well as in quality. *E. Molyneux.*

TRADE NOTES.

THE SUPPLY OF SEED POTATOS.

The President of the Board of Agriculture having given careful consideration to the question of the distribution of seed Potatos of the 1918 crop in England and Wales, has decided that the Board shall leave the supply to the ordinary trade channels.

It will be remembered that the scheme of distribution by the Food Production Department was introduced in the season 1916-17 when the supply of "seed" was extremely limited, and in order to overcome the difficulties of the allotment holder and cottager in obtaining suitable Potatos for planting. This scheme was put into operation again in 1917-18 in order to demonstrate further the value of change of "seed."

Mr. Prothero is of opinion that the objects which the Department had in view have now been secured, and that the prospects of the present Potato harvest yielding an ample supply of good "seed" are such as to remove the justification for the amount of Government interference involved in the distribution of "seed" by Agricultural Executive Committees during the coming season.

An Order relating to the sale and distribution of seed Potatos will shortly be issued by

the Ministry of Food, by which maximum prices (a) paid to the grower, and (b) charged by wholesale and retail dealers will be fixed for different classes and varieties. Under the Order it will be possible for small growers to obtain their requirements either direct from the grower or through ordinary trade channels. In any case where a society or group of small growers finds difficulty in obtaining supplies the Department will be prepared to give information as to reliable sources.

PROHIBITED IMPORTATION OF NURSERY STOCK INTO THE UNITED STATES.

A PROPOSAL is on foot to establish a measure prohibiting the importation of all nursery stock into the United States of America after June 1, 1919, fruit trees, seedlings, and Rose stocks alone to be excepted. It appears that this proposed legislation has the support of the Federal Horticultural Board of the U.S.A. Department of Agriculture, and of the Legislative Committee of the American Association of Nurserymen

Obituary.

E. J. Allard.—There will be many in the gardening world who will grieve to hear that Mr Edgar John Allard, Superintendent of the John Innes Horticultural Institution, died on October 23, 1918, from pneumonia after influenza, in his 42nd year

He was in many ways an exceptional man, and his services in organising the various lines of work, scientific and practical, in progress at the Institution, were of very high value. He had exactly the qualities needed for the conduct of experiments, the results of which in many cases can only be reached after a long period of years. He was instinctively accurate, acquiring without difficulty the habits of clean, precise manipulation and recording which are essential to success in such operations. He came of a Maidstone family, and as a young boy was started in the building trade, but even at that early age his tastes were so clearly marked that he ran away and went to work in a garden unknown to his parents. He was a born gardener. Trained in the hard mill of grower's work, he passed through several nurseries, notably that of Messrs. Sander. He then went as a young gardener to Kew, serving in various departments, and from thence to the Cambridge University Botanic Garden, where he was Mr. Lynch's right hand man for several years. As he grew older he turned more and more to the scientific side of horticulture. He had a sound knowledge of British plants, and had given much spare time to field botany, but his main interest was in the species of plants mostly cultivated in botanic gardens, with which he had a very wide range of practical acquaintance. Gifted with what may be called a natural sympathy for plants, he became a most skilful cultivator, and was successful with many notoriously difficult subjects. His plants almost always thrived. In an unusual degree he had developed the faculty of being aware whether he did or did not know a thing—one of the highest manifestations of memory, which makes the statement of such a man implicitly reliable.

Apart from the work that he did in carrying out the ideas of others and maintaining their experiments in good order, he did a great deal of plant breeding on his own account. Among novelties which he raised, a fine series of hybrid Calceolarias of extraordinary beauty will long keep him in remembrance. Several of these were handed over to Messrs. Sutton and Sons, and were a feature of the Chelsea Show in 1914, receiving a Silver Banksian Medal and a Certificate of Appreciation. In the following year another Banksian Medal was awarded to a further and very remarkable series of forms raised by crossing Calceolaria cana with certain garden varieties. Besides the greenhouse series, one named "John Innes," derived from *C. plantaginea* × *C. polyrrhiza*, is remarkable as being perfectly hardy, having survived the last three winters in open ground. A beautiful hybrid Passiflora, and also a Nepenthes, both of which he raised at Cambridge, have also been described under his name. At Merton he took great interest in the young men and boys who came under him. Knowing the difficulties of others as only those who have taught themselves can do, he was an excellent teacher, and perhaps enjoyed talking and demonstrating to his young gardeners more than any other part of his work.

As the conditions of the war became more severe and his staff was depleted, his responsibilities increased. Suffering already somewhat in health, he would not relax his devotion to his work, and refused proper rest, though it was evident to his friends that the strain was telling on him, and his powers of resistance impaired. Many felt the charm of his personality, and he will be greatly missed by various bodies, especially by the Scientific Committee of the Royal Horticultural Society, the Committee of the United Horticultural Benefit and Provident Society, and the Committee of the Kew Guild, of which he was a diligent member. *W. Bateson.*

The funeral service was held at Merton Park Church on Monday, the 28th ult. Amongst those present were the widow, her brother, Gunner Marshall, R.G.A., Professor W. Bateson, Director, and Mr. G. W. Gill, foreman of the John Innes Horticultural Institute; Sir David Prain, Director of Kew Gardens; Mr

THE LATE E. J. ALLARD.

A. J. Bruce, of the Board of Agriculture; Mr. W. Hales, Chelsea Physic Gardens, representing the Council of the Royal Horticultural Society; Messrs. A. Osborn, W. Taylor, and W. Lavender, representatives of the Kew Guild; Messrs. A. C. Hill, W. Winter, W. Wesker, and Penton, of the United Horticultural Benefit and Provident Society's Committee; Mr. J. Bintner, Imperial Institute; and Mr. A. C. Bartlett, representing the *Gardeners' Chronicle*.

Answers to Correspondents.

BEST FRUITS FOR A SCOTTISH GARDEN: *H. P.* Apples for cultivation as standard trees in Scotland as recommended in *A List of Most Desirable Varieties of Fruits*, published by the Royal Horticultural Society, are, for cooking: Lane's Prince Albert, Ecklinville, Lord Derby, Stirling Castle, and Bramley's Seedling; for dessert, Cox's Orange Pippin, Lady Sudeley, Wingston Pippin, James Grieve, and Beauty of Bath. Cherries, trained to a wall, May Duke, Early Rivers, Florence and Governor Wood. Pears, trained to a wall, Williams' Bon Chrétien and Doyenné du Comice, with either Jargonelle, Conference, Louise Bonne of Jersey, or Marie Louise as a third variety.

GAS-LIMING VACANT GARDEN GROUND: *E. H.* Gas lime is an excellent soil cleanser, but as it is as destructive to plant life as to insects, including slugs, care is needed in its use. Where land is quite vacant and not needed for cropping for some time to come, a dressing of gas lime may be desirable, both for ridding the soil of slugs and other pests, and for cleansing it of the fungus that causes club-root. A ton of fresh gas lime per acre is sufficient, provided it is used as fresh as possible. If exposed to the air for any considerable period gas lime loses much of its disinfecting power. Spread the gas lime evenly, and break the lumps as finely as possible; let it lie on the surface for a week or two and then fork it into the ground. Six weeks should elapse between the time of application and the time of sowing or planting the treated soil.

GRAPE ROT: *J. E. J.* The disease known as Grape Rot is caused by the fungus named Gloeosporium ampelophagum. It may be kept in check by dusting the vines with flowers of sulphur and quicklime during the period of growth, at intervals of ten days. On the occasion of the first dusting use sulphur alone; for subsequent applications add a little quicklime and increase the amount of lime with each dressing, until lime and sulphur are in almost equal proportions, but always use a little more sulphur than lime. Vines weakened in constitution by a bad rooting system or cultural errors are always more liable to disease or insect infestation than those in robust health.

LILY-OF-THE-VALLEY: *M. P.* Out door beds of Lily-of-the-Valley should receive a liberal dressing of rotten manure each year in autumn as soon as the leaves have decayed. If the soil has been washed away so as to leave the bases of the crowns bare, a dressing of rich soil, sifted, applied before the manure, will greatly assist the plants. Old potting soil, with the addition of leaf-mould, will provide material for a suitable top dressing. In the early summer, as the leaves are developing, occasional waterings with liquid manure will assist that development, and consequently react upon flower production. In this case free foliar development is essential to the free production of fine spikes of flowers. Similar treatment should be followed with Lily-of-the-Valley grown in pans and tubs, but owing to the limited amount of soil in these receptacles more frequent manurial dressings should be provided to maintain robust growth.

NAMES OF FRUITS: *P.* Beurré Bosc.—*N. E. J.* 1, King of the Pippins; 2, Waltham Abbey Seedling; 3, Ross Nonpareil; 4, Hollandbury; 5, American Mother; 6, Claygate Pearmain.—*C. H.* A seedling variety; not recognised.

NAMES OF PLANTS: *R. A. C.* Spiraea japonica alba.—*L. B. E.* Stephanandra Tanakae.—*T. T.* Lomicera sempervirens.—*O. B. J.* 1, Ficus Parcellii; 2, Leycesteria formosa; 3, Pteris semipinnata; 4, Todea superba.—*L. E. S.* 1, Amelanchier canadensis; 2, Polygonum baldschuanicum; 3, Berberis Thunbergii; 4, B. vulgaris; 5, B. Hookeri.—*A. J.* 1, Prunus lusitanica (Portugal Laurel); 2, Laurus nobilis (Bay Laurel); 3, Jasminum officinale; 4, Olearia macrodonta; 5, Veronica speciosa var.; 6, Caryopteris Mastacanthus.—*L. G. Pike.* Gleditschia triacanthos (Honey Locust). A native of the United States, and hardy in this country.—*F. E. B.* Eupatorium Weinmannianum.

STOCKS FOR FRUIT TREES: *J. W. W.* Nurserymen who make a speciality of fruit-trees may be able to supply you with the various kinds of stocks you need. Names and addresses of firms to whom you could apply will be found in our advertising columns.

Communications Received.—W. W.—W. R.—J. P.—J. P.—J. McD.—N. R.—J. W.—K. R. F.—J. W. G.—P. S. H.—A. D. R.—D. P.—E. A. B.—P. F. C.—C. B.—E. H. M.—N. E. B.—W. T.—A. C.—J. S.

THE
Gardeners' Chronicle
No. 1663.—SATURDAY, NOVEMBER 9, 1918.

CONTENTS.

ILLUSTRATIONS.

AUTUMN CROCUSES.

COMPARATIVELY few gardens seem to contain many species of autumn flowering Crocus, and yet the individual flowers are so beautiful and the cultivation so easy that it is surprising they are not more generally grown. Here, in my night, sandy soil, the difficulty is not to grow them, but to prevent them coming up in all sorts of unexpected places, for they seed themselves very freely, and, in addition, some species form tiny offsets which get left in the soil when the corms are lifted to grow to flowering size, and send up their bloom among any plants that have been planted above them.

The first to flower in this garden, and the most ubiquitous for the two reasons mentioned above, is C. zonatus, the well-known species from the mountains of Cilicia and the Lebanon. It derives its name from the bright golden ring that encircles the throat of the flower on the inner side of the segments. This Crocus forms immense flat corms often so much as an inch and a half in diameter. Each corm throws up several flowers in succession, so that the display lasts practically throughout September and October. The colour is pale pinkish lilac, though specimens occur in which the colour is so pale that the flowers appear by contrast with their neighbours to be almost white.

Another species, which is even more vigorous than C. zonatus, though a little less liable to spread by leaving minute offsets in the ground, is C. speciosus, from Persia, Asia Minor, and the Caucasus. It is one of the tallest and largest of Crocuses, and the red, tassel-like style forms a striking contrast to the blue-purple flowers, which bear conspicuous darker veins. In most forms the throat of this Crocus is white or only very faintly tinged with yellow, but there is a very beautiful pure white form in which both the throat and the style are golden. A group of flowers of this albino form wide open in the sun, with the pointed petals extended nearly horizontally, is a very cheering sight in September. There is another white form with less pointed segments faintly veined with lilac, but this, in my experience, is neither so vigorous nor so beautiful as the pure white form.

C. speciosus has yellow anthers and pollen, but I find occasionally that specimens appear which are to all intents and purposes C. speciosus except that they have white anthers and pollen. These must apparently be hybrids of that species, and either C. zonatus or a third species, C. pulchellus, which, though it has been in the garden here for a number of years, never seems to spread or increase with the vigour of the other two. It is distinguished by the clear, pale bluish colour of the flowers, with five conspicuous veins on the inner segments. The anthers are white and the filaments conspicuously hairy. It is a native of the Balkans and the neighbourhood of Constantinople, and it would be interesting to know under what conditions of soil or cultivation it grows vigorously, for with Mrs. Grimwood it was "of robust habit" and "increased freely from seed very freely."

FIG. 70.—CROCUS BORYI MARATHONISIUS: FLOWERS WHITE.

Another species which also declines to do really well in my garden is C. iridiflorus, which is perhaps the most distinct of all Crocuses. It is a Transylvanian plant which was well described on p. 158. It is remarkable for the small size of its inner segments, which are barely half the size of the outer series. The type is beautiful, but even more striking is the pure white albino form, in which the style-tassel is also white. Mr. Bowles told me once that this is one of the Crocuses that requires a relatively cool position where its foliage will not dry off too early in summer, but my difficulty is to find such a position which will also be open to the midday sun in September, so that the flowers may be induced to open and to display themselves to advantage.

September is also the flowering time of the Pyrenean C. nudiflorus, with large, tall-growing flowers of a clear purple. This species is said to have become naturalised in some of the N. Hand counties of England and is remarkable for its curious habit of sending out stolon-like growths which form new corms at a distance from the parent corm. The plant does not grow very vigorously with me, and it would not be surprising to find that it needs a soil which remains moist even in summer, for this seems to be the case with many plants which are natives of the Pyrenees, where underground moisture appears always to be abundant in the soil.

On the contrary, C. medius, from the Riviera, grows well here, and the large, deep red style forms a striking contrast to the deep purple of the flowers. C. medius flowers early in October, and is a sturdy, vigorous species.

All the foregoing Crocuses have the disadvantage that the flowers appear above the ground while there is still no vestige of the foliage apparent. This only develops later. By mid-October, however, several species begin to flower, of which the leaves are at any rate partly de-

veloped when the blooms open. Of these the first to flower in my garden is C. hadriaticus, from Albania and Greece. It has white flowers with rather pointed segments and a long, narrow scarlet style like that of C. sativus, to which it appears to be closely related. The corms of the two species are very similar and are enclosed in soft fibres which form a tuft of hairs at the apex. Maw says that there is no satisfactory character to distinguish this species from C. sativus except the colour of the flowers, and, since colour is usually not a good specific character, it is no surprise to find that pale lilac-coloured forms appear among seedlings of the ordinary white C. hadriaticus.

C. sativus is a richly coloured species, with lilac-purple flowers, of which the throat appears much darker owing to numerous dark veins. The style is very long and narrow and of a bright red colour. The corms must be large and vigorous for flowers to be produced. In the resting state they are surmounted by a tuft of soft

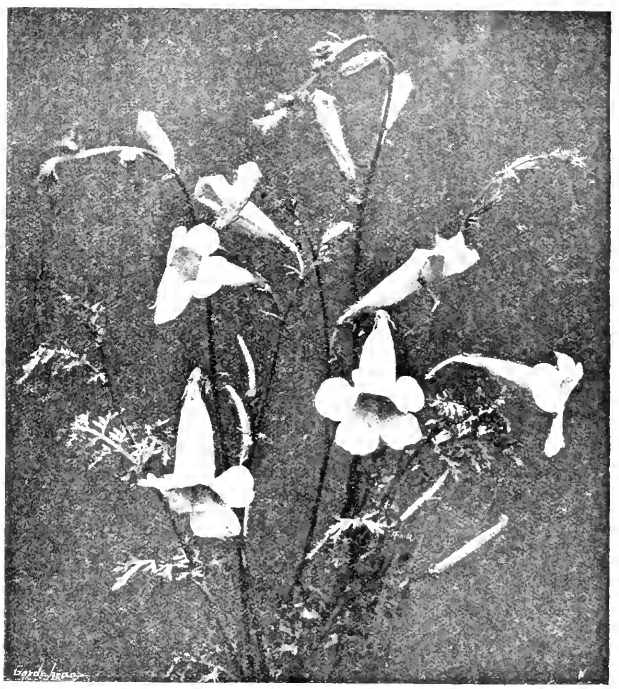

FIG. 71.—A YELLOW-FLOWERED FORM OF INCARVILLEA VARIABILIS.

hairs. There are several forms of this species, and it is apparently true that the variety, which used to be largely cultivated as the source of Saffron, has been so long increased by offsets and transplantation that it has lost the power of reproducing itself by seeds.

By far the best of all the white-flowered Crocuses at October is a species that has not long been distributed in our gardens under the name of C. marathonisius (see fig. 70). If it is indeed only a variety of C. Boryi it is a vast improvement on the type. The flowers are large and of a peculiarly solid pure white, which is set off by the golden throat and the orange-scarlet style. The leaves are sufficiently developed at flowering time to give some support to the flowers and to guard them from the reproach of looking naked that is sometimes level at the earliest flowering species. C. marathonisius, as well as the white form of C. speciosus described above, comes quite true from seed. It is a vigorous grower and certainly deserves a place in every garden.

C. Salzmannii, from the south of Spain and North Africa, is another October-flowering species, of which the leaves are quite appreciably developed before the flowers appear. It is a sturdy species, forming large corms that throw up several flowers of a good bluish-lilac shade.

All these species of Crocus are well worth growing in pots as well as in the open ground. The corms should be potted early in July or August, and the pots should then be plunged in earth or ashes until the tips of the growths burst through the surface. The flowers will then develop rapidly if the pots are stood either in a sunny window or in a cold frame, and the protection from heavy rain that they thus obtain enables the flowers to develop even more perfectly than is sometimes the case when they are grown with no protection in the open ground. W. *R. Dykes, Charterhouse, Godalming.*

NEW OR NOTEWORTHY PLANTS.

HELICHRYSUM COOPERI, HARVEY.

In 1905, the Botanical Institute at Montpellier received a parcel of plants from Basutoland from the Rev. Mr. Dieterlin. They were identified by my friend, Monsieur Daveau, the Conservateur of the Jardin des Plantes. Under the number 346, and the vernacular name of "Phoho ea Thaba," he recognised a specimen as Helichrysum Cooperi described by Harvey. Seeds were sent to me, and now, after some ten years, the plants have become sub-spontaneous in my garden, surviving even the most rigorous winters without protection. They are not, however, hardy at Montpellier, for there they have been killed by frost several times. Helichrysum Cooperi is very much less ornamental than H. bracteatum; still, its heads of brilliant yellow, forming a flat disc, measure in inch in diameter. The leaves are large, mealy, and whitish. The plant requires to be treated as a biennial. *F. Denis, Balaruc les Bains, Herault, France.*

A NEW INCARVILLEA.

The new, yellow-flowered Incarvillea illustrated in fig. 71 is abundant on the hot, bare slopes about Siku, etc., in the south-west corner of Kansu, especially frequenting steep and stony banks, and never ascending to the sub-alpine zone. Its flowering season begins in May, and is not wholly over by November, so that some of its yellow trumpets are almost always open between 6-6,500 feet. In nature it is certainly perennial. At Edinburgh it was first named Incarvillea variabilis var., though the plant is singularly stable, and never shows any trace of pink in the flowers. Seeds have germinated with great ease in the garden, and the plant grows and flowers with more freedom than I. variabilis. It remains to be seen if it will prove hardy in this country. In the *Botanical Magazine*, t. 7,651 (1899), Sir Joseph Hooker, describing I. variabilis, states that a yellow-flowered variety of it had been found in Eastern Tibet.

Professor I. Bayley Balfour, of the Royal Botanic Gardens, Edinburgh, contributes the following particulars of the plant:—"The plant was raised from seeds collected by Mr. Farrer and Mr. Purdom in very hot, dry, stony places of the loess region about Siku in Kansu, where it flowers beautifully from May to November. Incarvillea variabilis is well named, for it shows much variation, and several of the varieties have been named by Batalin. Mr. Farrer's plant was examined critically here by Mr. W. W. Smith, who found that it is very near Batalin's I. variabilis var. Przewalskii, a plant collected in Kansu by Przewalski. But it does not quite match that variety, which is hairy all over, while Mr. Farrer's plant is glabrous. We were content at first to record it as a variety of I. variabilis without precise name, but later, for the sake of distinction in gardens, Mr. W. W. Smith gave the name Incarvillea variabilis var. Farreri to Mr. Farrer's plant, and under that name we are growing it here. It has flowered freely, and has produced seed during the past two seasons."

LETTERS FROM SOLDIER-GARDENERS.

GARDENS IN THE WAR AREA.

Being temporarily stationed close by a ruined village, I took advantage of a quiet afternoon to wander over what remains of the gardens with the object of seeing to what extent plants and trees had withstood the destructive effects of war. This particular village, with its gardens and paddocks, occupies about 200 acres. It has been occupied by the enemy on two occasions and has suffered more than most places I have seen—hardly a wall remains standing. The whole area is littered with débris and punctured with shell-holes. Trenches and wire entanglements run through many of the gardens.

As may be expected, weeds are rampant. Ranunculus repens is the most widespread, and after that Mercurialis annua. The former clearly illustrates the effectiveness of vegetative reproduction.

Nettles, Docks, Sow Thistles, Plantains, and Chickweed are luxuriating. Convolvulus arvensis covers old shell-holes with a tangle of growth. Atropa Belladonna and Verbascum Thapsus are conspicuous on the heaps of débris.

Although the season is rather late (October) a number of cultivated plants are in flower. The two most common are Perennial Sunflowers and Asters (Michaelmas Daisies), which seem to thrive in the most amazing places, lending a bright touch of colour to the desolate scene. Several varieties of Phlox, Japanese Anemones, Globe Thistle, Snapdragon, French Marigold, and a pink Sedum are to be seen in flower here

and there. A single bush of Fuchsia and a few Roses complete the display.

Other plants which survive but are not in flower include Paeonies, Pinks, Sweet Williams, various Saxifragas, Iris, Montbretias, variegated Pulmonaria, Solidago, Aquilegias, Primroses and Violets.

in the timber and by atmospheric moisture. I have been surprised to find several of these cut-down trees bearing foliage, and even a few precocious flowers now, but these are specimens which have a small portion of wood about an inch in width joining the prostrate tree to the stump. A fresh growth of wood is gradually

part of the country, but has met with a similar fate. It exhibits amazing vitality—in all examples I have seen the stumps have broken into a mass of vigorous growth.

Among rarer subjects which have been senselessly hacked down I noticed a Tulip tree (Liriodendron) of 8 inches diameter, a golden Yew, and a handsome weeping Ash. *Alfred B. Meggles, 2nd Lieutenant, R.G.A.*

FIG. 72.—SUNK GARDEN AT MUCKROSS ABBEY, THE RESIDENCE OF A. R. VINCENT, ESQ.

I remember seeing a pleasing display of Primroses, Snowdrops and Crocuses in the neighbourhood last spring.

The following shrubs were noticed: Weigela, Forsythia, Tamarix, Berberis, Rhus, Rhododendron, Ceanothus, Pyracantha, Salvia, Phlomis, Euonymus, species of Spiræa, Quince, Cornus and Lilacs. A wall of the Wistaria clings to the remains of a once pretty. Most of the shrubs have been damaged by shell splinters, but not sufficiently to destroy them.

Asparagus, Spinach, Chicory, and Onions are the only representatives of vegetables left in the plots.

Currant and Gooseberry bushes are very plentiful, and with a judicious thinning later should be little the worse for their long neglect. Autumn Raspberries, both red and yellow varieties, are in fruit, but the plants are getting into a very weedy condition.

Strawberry runners have spread far and wide, rivalling even the creeping Buttercup in their riotous growth.

Every tree of any size was cut or hacked down by the enemy in 1916, and it grieves one to see such large numbers of fine trees mutilated in this abominable way.

Poplars, Elms, and other trees, which form so familiar a feature of the French roads, are often cut down on high elevations with the object of preventing them being used as observation posts, but fruit and decorative trees have been wantonly destroyed in this village.

Apple, Pear, Plum and Cherry trees, many of them with stems 1 foot or 18 inches in diameter, have been destroyed in scores, the usual method adopted being to saw them through about 2 feet above ground, though blasting was resorted to in many instances.

Many readers will remember seeing photographs in the illustrated weekly papers last year showing similar trees lying on the ground but full of blossom. The flowers, of course, were developed from buds already formed before the trees were cut down, sustained by the sap stored

MUCKROSS ABBEY.

RECENTLY I had the privilege of visiting Muckross Abbey, which, standing in a demesne of some 15,000 acres, includes part of Killarney's beautiful "lakes and fells," and was greatly interested in the various improvements that have been carried out since 1911, when the estate passed into the hands of its present owner, A. R. Vincent, Esq. Both Mr. and Mrs. Vincent are keen gardeners, and, under their supervision, the gardens are being entirely remodelled. New glasshouses have been erected by Messrs. Richardson, of Darlington, and indoor Vines, Peaches and Figs are all carrying good crops of fruit.

The kitchen garden (see fig. 73) is about 5 acres in extent, and is well stocked with good crops. Borders of the kitchen garden have been newly planted with young, healthy fruit trees, but, as in most places this year, with the exception of soft fruits, two crops were light. Herbaceous borders, also borders of Carnations, Gladioli, Roses and Sweet Peas were at the time of my visit making a grand display.

The rock garden is most interesting; it is composed of carboniferous limestone, covering about 1 acre of ground, and rising to a height of about 30 feet. At present it is only planted on the south side, and parts for paths have been blocked out and steps formed. The north side has still to be attacked, and when this is done, and the whole developed as contemplated, it will probably be the finest rock garden in Ireland. During May and June it was a mass of flower, for Saxifragas, Potentillas, Dianthuses, Lithospermums, Campanulas and Primulas, are planted in profusion, and also dwarf Conifers.

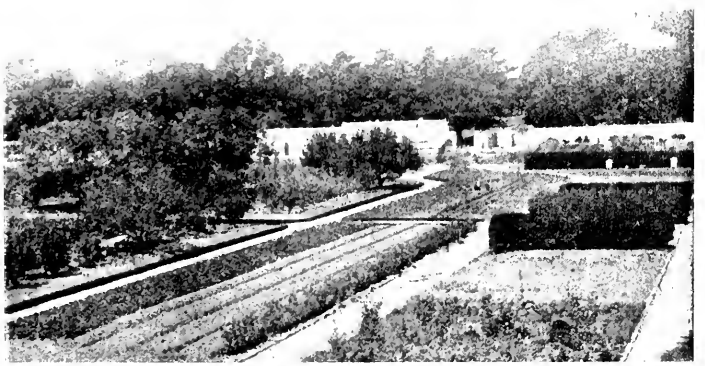

FIG. 73.—MUCKROSS ABBEY: THE KITCHEN GARDEN.

such growths, from trees which have not been cruelly cut, should be capable of producing useful fruit in a few years' time, but it will be necessary to replant most of the gardens and paddocks with young trees.

The Walnut is a very common tree in this

Unfortunately the heavy rainfall of this district renders the cultivation of certain Alpines very difficult.

A sunk garden (see fig. 72), with paved walks designed by Messrs. R. Wallace and Co., Colchester, has been formed near the mansion, and

is filled with sweetly-scented Roses, Lavender, Rosemary, Pinks, Verbena, Nicotiana, and other old-fashioned flowers. Woodlands walks have been made, and are to be greatly extended. They have been planted on either side with Liliums, Montbretias, and other perennial flowers, and when finished will add a charm to this lovely place, nestling beneath the Torc Mountain.

The gardener, Mr. C. Bennett, is to be congratulated on the excellent condition of all departments under his care. *E. S.*

THE ALPINE GARDEN.

CALCEOLARIA POLYRRHIZA.

Of the reputedly hardy Calceolarias suitable for the rock garden, the dwarf C. polyrrhiza is probably the one which is least liable to disappear. The others, e.g., C. integrifolia, C. plantaginea, and C. Kellyana are fairly hardy but are not so able to take care of themselves as the one under notice, which is of creeping habit, and needs watching if grown in the vicinity of other choice Alpines, as it may smother its neighbours. In a position where it can be allowed to ramble at will it soon spreads over a fair space, and produces an abundance of its curiously-shaped yellow flowers with brown spots; the blossoms are more helmet-shaped than those of some of its allies. The height of C. polyrrhiza is only about 6 inches. The plant likes a sunny position with me, and is allowed to ramble about and come up among some patches of Heaths, and among the stones at the base of a rockery. In some places it appears to like a boggy soil, but this is not necessary for its well-being. There are differences in the quality of some of the plants sold as C. polyrrhiza: some produce more and better flowers than the others. *S. Arnott.*

FOREIGN CORRESPONDENCE.

NEW FORMS OF RED SUNFLOWERS

The colour-patterns first described in the red Sunflowers (Helianthus annuus, varieties) were comparatively few, but this year we have quite a series hitherto unrecorded. The following are some of the more interesting or striking:—

1. Vinous series; wine-red on a pale or primrose background. Disc dark.

(a) flavobasis, n. var. Rays vinous, a little dilute apically; about basal 12 mm. bright canary yellow.

(b) trizonatus, n. var. Same as last, but vinous, strongly dilute or whitish on apical third, leaving a broad ring of deep vinous red through the middle of the rays. A very striking form.

(c) semivinosus, n. var. Rays with basal half (except yellow at extreme base) vinous; apical half pale yellow.

(d) reversus, n. var. Reverse of the last; almost basal half canary yellow; apical half rather dilute vinous.

(e) pallescens, n. var. Dilute vinous, with pallid apices, giving a curious pale flower-head.

(f) passiflora, n. var. Disc very dark, with purplish tint. Rays about 35, in two rows. Rays pale, approaching straw yellow, with basal third or less deep vinous, nearly the groat of Gravereaux, but with a little more blue in it. A very pretty form, recalling a Passion-flower in the colour-effect.

(g) apicalis, n. var. Basal two-thirds of rays rich vinous red; apical third pale primrose.

2. Chestnut series; chestnut-red on orange. Disc dark.

(h) apicalis, n. var. Same pattern as (g).

(i) basalis, n. var. Chestnut reduced to basal third or two-fifths, the rest of the ray orange.

(j) dilutus, n. var. Chestnut on basal half of ray, but so dilute as to be scarcely noticeable.

(k) latibasis, n. var. Basal half, or nearly half, of rays rich orange, the part beyond dark chestnut.

The rays also vary much in form, and a long series of types will eventually be described. The following may be noted now:—

(l) convolutus, n. var. Margins of rays curled upward (inward), especially at the beginning of the flowering period of the head. The effect is very striking in zonatus forms, with a broad ring of chestnut across middle of rays, because the upturned edges are orange, contrasting.

(m) revolutus, n. var. Margins of rays curled downward, producing a narrowing effect. This is not developed in the younger heads, but only at maturity, contrary to the condition in the last variety. It has been found in the wild form (lenticularis), as well as in our cultures.

I am accumulating data for a full account of the characters and variations in Helianthus, and shall be very grateful for any information, which will be duly credited. It is especially desirable to know of the appearance of any new varieties, either of the annual or perennial species. Drawings or photographs should be made (the latter with a colour screen), when possible. Rays should be pressed separately; they are not so good when the attempt is made to preserve the whole head. Information is also greatly desired concerning the Jerusalem Artichoke, Helianthus tuberosus, and its varieties. We are carrying on experiments with this plant in Boulder, and expect to have many interesting facts to report later. *T. D. A. Cockerell, Boulder, Colorado.*

HARDY FLOWER BORDER.

STACHYS BETONICA VAR. ALBA.

Being interested in albinos generally I was particularly pleased with the form collected by Mr. R. Irwin Lynch, and illustrated on p. 127, after having been cultivated by him. What impressed me most forcibly was the dwarf habit of the plant (5 to 7 inches when passing into fruit). The ordinary purple form is a sprightly plant, even in the wild state, and I have seen it flowering at various heights, including dwarfer ones than Mr. Lynch mentions, but considered the dwarf habit was due to the nature of the soil or a dry situation, and that all would have grown taller if planted in good garden soil. No doubt there are pigmies amongst them, but garden cultivation is necessary to prove this. The profuse-flowering nature of the variety also appealed to me. The albino of the Betony is not a common one, as I had never seen it till I collected flowering specimens of two plants within a hundred yards of one another in Berkshire in 1915, although I have been noting albinos since I was at school. There is precedent for bringing an albino of a British plant before the Floral Committee of the R.H.S., for Malva moschata alba had a First-class Certificate on August 9, 1881. This I have since collected on Salisbury Plain. The first albino I ever observed was Campanula rotundifolia var. alba. The most common wild one is Cnicus palustris var. alba, found all over Britain. Other plants frequently represented by albino forms are Calluna vulgaris, Erica Tetralix, Rosa dumetorum, Viola lutea, Galeopsis Tetrahit, Fritillaria Meleagris (local), and Viola odorata. Altogether I have a record of having gathered or observed 43 albinos of British species of plants. *John Fraser.*

The Week's Work.

THE KITCHEN GARDEN.

By F. Jordan, Gardener to Lieut.-Col. Spender Clay, M.P., Ford Manor, Lingfield, Surrey.

French Beans.—Make sowings of French Beans every fortnight, according to requirements, placing seven or eight seeds in each 8-inch pot, which should be about three-parts filled with soil. Plants which have been grown in cool houses may be forced in a temperature of 55° or 60°, allowing them a free circulation of air in favourable weather. See that the roots are well supplied with water, and, as the Beans approach maturity, give weak applications of liquid manure, with light syringings overhead, but the latter only on bright days. Top dress later plants as they become ready, and arrange a few small twigs in each pot as supports. Take care not to over-water the roots.

Winter Tomatos.—After November it will be a more difficult task to obtain ripe fruits of Tomato than hitherto. Greater care will be needed in watering and ventilating. Light top-dressings of rich compost will benefit plants that are fruiting freely, and they should also receive an occasional watering with diluted liquid manure. Pollinate the flowers daily, maintain a moderately dry atmosphere, and let the temperature be as near 55° as possible. Do not allow the fruits to hang on the plants after they have coloured. They will keep well in a warm, dry room. Light fumigations should be given the house on every alternate night for a week or ten days if white fly is troublesome; one or two fumigations would be of no avail, and strong fumigations are harmful.

Ground Operations. — Ground intended for Onions and other deep-rooting crops should be prepared at this season. Much ground of poor quality that has recently been brought under cultivation, and where surface digging only has been practised, would be much improved by deeper cultivation. It is impossible to give advice that will meet every case, and considerable judgment must be exercised in the matter. A light, open situation should be chosen for Onions. The sooner all kinds of light soils intended for this crop are trenched the better, and it is almost impossible to apply too much manure. Farmyard manure is best, and at least 2 feet of soil should be broken up and the manure well incorporated, leaving the surface as rough as possible. With the exception of sticky clay land the bottom soil should be brought to the surface, and much may be done to improve such soils by breaking up the sub soil and incorporating with it long manure, with a liberal addition of lime rubble, burnt garden refuse, road scrapings, and prepared garden rubbish. I do not advocate burying a large quantity of rich manure in the bottom spit; as a rule it is better for most plants to grow near the surface, where the roots obtain most warmth.

THE ORCHID HOUSES.

By J. Collier, Gardener to Sir Jeremiah Colman, Bart., Gatton Park, Reigate.

Epidendrum prismatocarpum. — Plants of Epidendrum prismatocarpum are rooting freely, and any necessary re-potting should be attended to at once. Ordinary flower-pots form the best receptacles, and they should be filled one-third their depth with clean crocks for drainage. A mixture of A1 fibre or Osmunda fibre cut up rather roughly and a sprinkling of crushed crocks provides a suitable rooting medium. After the roots have grown into the compost give them plenty of water, and continue to do so until growth is complete, when only sufficient moisture is needed to prevent the roots from perishing. A slight shrivelling of the pseudo-bulbs during the resting period will do no harm, for although the plant is evergreen it seldom flowers satisfactorily unless given a decided rest for a season-

Cypripedium.—Such Cypripediums as C. bellatulum, C. concolor, C. niveum, C. Godefroyae and the many hybrids of this section, should receive very careful treatment during the winter. Having thick, fleshy leaves, the plants do not require so much water at their roots as other Cypripediums. The compost should be allowed to become quite dry between each application of water. The receptacle may be immersed to the rim, or the water poured around the outer edges of the soil, the object being to prevent moisture lodging in the axils of the leaves; care should also be taken to prevent water dripping from the roof coming in contact with the foliage. In removing the flower-scapes cut them clean to the base, for it a portion of the stalk is left it sometimes sets up decay, which soon proves fatal to the plant. The winter-flowering Cypripediums, including C. insigne, its varieties, and many hybrids, are near the flowering stage, and as the flower-scapes attain sufficient length they should be neatly tied to stakes. The plants should be kept moist at the roots, for if the leaves were allowed to shrivel at this stage it would prove very injurious to the constitution of the plant.

Masdevallia.—Plants of Masdevallia tovarensis are developing their flower-spikes, and specimens that have been grown in cool conditions during the summer should be removed to a house having an intermediate temperature. Exercise great care in watering these plants at this season; the compost should always be allowed to become dry between each application of water, as an excess of moisture at the roots may cause the foliage to damp and fall from the plants.

Coelogyne cristata.—This Orchid and its varieties are nearing the completion of the season's growth, and will soon be sending up flower-spikes from the new pseudo-bulbs, at which stage the supply of water at the roots should be reduced, but not to such an extent as to cause the plant to suffer from drought. Well-rooted, pot bound plants of this species will be greatly benefited from now onwards to the flowering stage by periodical applications of weak liquid manure made from cowdung, C. barbata, C. ocellata, and C. elata are developing flower-spikes, and should be well supplied with moisture until their flowering season is over.

PLANTS UNDER GLASS.

By E. HARRISS, Gardener to Lady WANTAGE, Lockinge Park, Berkshire.

Bouvardia.—Keep a sharp watch for red spider, which often attacks Bouvardias after they have been placed indoors, and should any of the insects be detected dip the plants in a strong insecticide. The plants should not be coddled if healthy flowers are required, and they should be grown near the roof glass. Part of the batch of Bouvardias may be brought into flower a little earlier than the rest by growing the plants in slight warmth, but fire-heat should never be used to excess.

Luculia gratissima.—This exotic is one of the most beautiful of cool greenhouse plants; its successful culture depends almost entirely on a suitable glasshouse in which to grow it. A house which can be well ventilated all through the growing season is absolutely essential. The roots should be planted in a restricted, well-drained border. The plants usually pass out of flower about the end of November, and if they have filled their allotted space the flowering wood may be shortened severely. During the winter the plants should be rested, keeping the roots on the dry side, and the house as cool as possible. Bouvardias should not, however, be exposed to severe frost.

Violets.—Let Violets growing in frames have an abundance of fresh air at all times; when the weather is favourable, remove the lights entirely, and do not close the frame except when severe frost is imminent. Water the roots thoroughly when they are in need of moisture, and do this on a fine, bright morning to allow the foliage to become dry before nightfall. Examine the plants about once a week, and remove decayed foliage. Keep a sharp watch for slugs.

Bulbs in Pots.—Recently potted bulbs need careful attention, as rats and mice often damage them. When the foliage has made an inch or two of growth the plants should be placed in a cold frame to which plenty of air is admitted during favourable weather. Do not allow the roots to suffer for want of moisture. Place early-flowering Narcissi and Roman Hyacinths in gentle warmth as occasion demands. Bulbs of Lilium candidum which were potted early in the season may also be placed in a warm house.

THE FLOWER GARDEN.

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

Humea elegans.—This handsome plant is frequently difficult to winter, sometimes dying or at least losing many of its lower leaves. A low temperature, free from frost and damp, suits it best, and without letting the soil in the pots become very dry for the next eight or nine weeks, be very careful in applying water. By the end of January, if these conditions are observed, the plants should be ready for potting, finally, after which fresh growth will be renewed with vigour, and handsome specimens obtained for planting in beds or standing in pots out of doors during the summer.

Surface Dressing. It is of great benefit to bedded-out Pinetums, after removing decayed foliage, to surface-dress the plants. Nothing seems to suit them so well as cow manure laid over the roots from which the soil has been withdrawn, to be returned after the dressing has been applied. Spanish and English Irises, and indeed all bulbous Irises appreciate a rich surface dressing but no growth commences. If it is laid a 2-inch thick layer of compost, which may consist of soot, potted manure, old potting soil, and material from Mushroom beds, should be laid evenly over the surface. The ground, it is perhaps needless to say, should be perfectly cleaned of rubbish before the compost is applied. Material of the same nature may also be applied to Hellebores, Christmas Roses, and Lily of the Valley.

Carnations. It is a good plan to examine beds of Carnations before the winter to stir the soil and scatter soot around the plants. So that the wind is not harming the plants by twisting them round. If the soil is not very light to-day it may be an advantage to make it firm by means of foot pressure. Carnations being scattered in pots should be kept in a cool position so that they need no water at the roots until January. Some dry, fallen Beech leaves scattered among the plants will serve to prevent frost breaking the pots. Even in very cold weather air should be admitted freely to the frames in which Carnations are grown, and every opportunity taken of fine weather to remove the lights altogether. Usually root cuttings of these plants are in the season in a hot frame; such plants are valuable for late flowering, and are ready for transference to pots at about this time, and should be kept dormant until renewed growth starts them into new growth.

FRUITS UNDER GLASS.

By W. J. GRISE, Gardener to Mrs. DEMPSTER, Keele Hall, Newcastle, Staffordshire.

Early Vines. The earliest permanent vines should be pruned finally directly the foliage has fallen. Old vines which have been forced for a number of years should not be pruned too severely unless the back buds are well developed and prominent, when close pruning is advisable. The glass and woodwork should be well cleansed with strong soapy water, and the walls washed with fresh lime. Half a pound of Gishurst Compound to two gallons of very warm water will make a suitable wash for the main stems, which should not be scraped, but loose bark that comes off freely may be removed. Where mealy bug is troublesome more bark may be removed and the rods dressed with a mixture of tar and dry soil. Half a pint of tar to a gallon of dry soil, mixed to the consistency of paint, is a safe specific, but it must not come into contact with the buds. Keep the house well ventilated until the time for forcing arrives.

Pot Vines.—Much the best results will be obtained by deferring the forcing of pot vines until the new year. In the meantime, the canes should be shortened to a suitable length, divested of all laterals, and the cut surfaces painted with styptic should they exhibit any signs of bleeding. After they have been washed in strong soapy water, carefully tie the canes in a circle to two stakes inserted in the pots. Top-dress the roots with rich, fibrous loam mixed with a little bone-meal. The pots should be plunged to their rims in bracken Fern, tree leaves, or ashes, in a cold house, to protect them from frost.

Cucumbers.—Direct syringing of Cucumber plants intended for winter fruiting should be discontinued, and atmospheric moisture maintained by slightly damping the paths and keeping the evaporating troughs full of diluted liquid manure or clear water. Keep the roof glass and floors scrupulously clean and coat the walls with fresh limewash. As the roots appear through the surface of the soil cover them with light top-dressings composed of loam, old lime rubble, a little charcoal or wood ash; give them an occasional sprinkling of a concentrated manure. Water should be given less frequently, but in sufficient quantity to reach the roots, and should always be used tepid. For the next two months or more the plants will not make much progress, but if the laterals are allowed plenty of space, and only a few fruits permitted to develop, the plants will grow freely at the turn of the year. The fruits should be cut before they attain to full size, and when cut may be kept for a long time with their stalk ends placed in bowls of water. To maintain the necessary night temperature, which should range between 60° and 65°, requires fuel, and I think prospective growers would be well advised to discard their plants, and reserve their fuel supply for the turn of the year.

THE HARDY FRUIT GARDEN.

By JAS. HUDSON, Head Gardener at Gunnersbury House, Acton, W.

Autumn-fruiting Raspberries.—We are still gathering berries of autumn fruiting Raspberries daily for dessert, and in the best possible condition. Having a surplus over and above our daily requirements, some have been used for preserving and also for stewing. These Raspberries have proved a great success this season; I do not think we have ever had them in better condition. The plants resist damp better than the summer varieties. On the Continent, and more particularly in France, these autumn Raspberries are more prized than in this country. By covering the rows with glass early in October the supply will be considerably prolonged. Such an arrangement could easily be devised somewhat after the method adopted to protect Chrysanthemums. Our small fruit gardens are netted, and the netting protects the Raspberries somewhat, but early autumn fogs, which cause the leaves to drop prematurely, and spoil the quality of the berries, do more harm than cold.

Planting Fruit Trees. The weather of October was favourable for operations in fruit tree nurseries, but the nurserymen are handicapped by a shortage of labour, therefore those who are expecting their newly ordered trees must exercise patience. Have everything in readiness when they arrive, so that there may be no delay in planting. Delay in railway transit may occur under present conditions, and the state of the roots should be ascertained when unpacking the trees, for it may be necessary to give the roots a soaking in water before they are planted. The weather is suitable for planting operations, and an effort should be made to concentrate on this important work whilst conditions are favourable. It should be a good season for shifting all young fruit trees; it is not desirable to have the wood over-ripened, but rather to have a plentiful supply of active sap still in the trees. In planting be careful to spread out the roots in every instance; see that none is cramped or crippled in the process of planting. Some amount of root action will soon take place, and this is all important. Make the soil firm, and wherever needed stake the trees directly they are planted. Should any part of the stems be bruised or the bark broken in transit, smear a little tar lightly over the wounds, as this may prevent canker following. Label the trees with permanent labels, and in extensive planting make a list of the trees in a book.

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AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 45.5°.

ACTUAL TEMPERATURE:—*Gardeners' Chronicle* Office, 41, Wellington Street, Covent Garden, London, *Wednesday*, November 6, 10 a.m.: Bar. 30.2, temp. 49°. Weather—Dull

The Ormskirk Potato Trials, 1918.

Wart disease of Potatos is spreading with disconcerting speed, and the trials conducted at Ormskirk by Mr. John Snell, and those working with him, for the Board of Agriculture are of incalculable value to all Potato growers. Whether in the garden or in the field, we are, or soon will be, face to face with the certainty that our Factors and King Edwards, our Arran Chiefs and Evergoods, our Epicures and Early Puritans will be, at lifting time, but a mass of warts, useless as food for man or beast, a menace to the health of all other Potato patches, and a dead loss to the grower. What can take their places? This pertinent question the trials conducted at Ormskirk have helped to answer. Three hundred and one stocks of Potatos were this year included in the trials carried out to determine the resistance to Wart Disease. One hundred and thirty-one of these stocks were planted for demonstration purposes, and there were one hundred and forty-seven (some of them in duplicate) sent in as new varieties for trial. In the issue for August 10, page 60, we dealt with the inspections arranged in the summer, and now that the crops have been lifted, the Food Production Department, in conjunction with the Lancashire Farmers' Association, arranged on Wednesday and Thursday, the 30th and 31st ult., an Exhibition and Conference upon the results. On the Thursday Mr. Snell informed those present at the Conference (at which, as at the Exhibition opened by Lord Bledisloe on the Wednesday, there was a good attendance) that of the new varieties in the trials only twenty-nine had proved immune. It is understood that a full report of the trials will soon be available, therefore it is unnecessary for us to refer at length to the behaviour of the varieties; but as really early immune varieties, new and old, are few, the names of those so far proved resistant may be given. They are: A1, Witchhill, Crown Jewel, Sutton's Ashleaf, America, Coronation, Resistant Snowdrop, Dargill Early, and Arran Rose. Some of these varieties are of low-cropping capacity. Edzell Blue is often included in the list, but only because it may be lifted early, not because this variety finishes early. Of some of these sorts the stocks are small, and both here and among other types of Potato there is ample scope for plant-breeders.

Apart from one other important matter, to which we refer below, the principal interest of the Conference centred around two questions: the possibility of raising again types so similar to already existing varieties as to be indistinguishable from them; and the origin of new varieties by bud-sports or as graft-hybrids. The latter question has already been debated in our columns, and Mr. Arthur W. Sutton read an interesting review of the present state of our knowledge of the matter, concluding that the only authentic examples of such origin are a few colour-forms, and commenting upon the unreliability of the evidence adduced as proof of the contrary. In view of the interest taken in the subject, we have published the principal details given in Mr Sutton's paper on page 190.

While we cannot accept as proven the impossibility of bud-sporting occurring so as to produce new varieties, it is clear that the occurrence is at least very rare, and that as immunity to Wart Disease is a varietal characteristic, there is every reason to believe that it will be a persistent character, and that the basis of the trials now being carried out is thoroughly sound. There seems no good ground for accepting evidence that the alleged newly-developed form is identical with an old one in all discernible characters as conclusive proof that the form has not been newly developed, whether as a bud-sport or as a seedling. It would, in fact, be strange if the same combination of characters should not arise more than once when multitudes of seedlings are raised, and this not only when the original parental forms are being used, but also even when other forms are being experimented with. We discerned a tendency to regard such evidence as valid at the Conference, but, taken alone, we cannot accept it as conclusive.

Among a batch of selfed seedlings of, say, Factor, one or two may well possess the characters of their parent in such a degree as to be indistinguishable from it, though the majority may be dissimilar from it and from one another. The point cannot be settled by discussion, but only by careful experiment carried out over a lengthy period. Mr. John Snell pointed out that of the 113 forms in the trial 20 were similar to Up to Date in habit and susceptibility to Wart Disease, and among them some were said to be seedlings. So with other supposed new forms. Ten were like British Queen, eleven seedlings of, or selections from, President, seven like Northern Star, three like Sharpe's Express, and one each like Duke of York and Epicure, and in every case they, like their prototypes, proved susceptible. It seems, therefore, if these be seedlings, the use of susceptible varieties as seed parents cannot be expected, at least in the first generation, to give immune ones.

There is abundant work still awaiting the doing, and all will be glad to hear that there is good prospect of the speedy establishment of a branch of the National Institute of Agricultural Botany at Ormskirk to deal with these and related problems. Mr. Lawrence Weaver, who took the chair at the Conference, gave an account of the progress made towards the aims of the Institute, and announced the probability that a farm of 56½ acres would soon be acquired for the Potato work at Ormskirk.

The show itself embraced a large number of exhibits of Potatos of commercial value, groups from some of the leading seedsmen, and various classes, such as for the largest individual Potato. The largest group was one showing the varieties grown in the Board's trials, and nothing could be more impressive as to the dire effects of the Wart Disease than the long range of plates of many varieties all attacked by it; and nothing more promising for future success than the smaller number of clean tubers, including such new varieties as Majestic, Arran Rose, The Bishop (if it prove distinct), Arran Comrade, and America, and the better known Great Scot, Kerr's Pink, Lochar, Abundance, and White City. Two or three sorts are, for one reason or another, still classed as doubtfully resistant, and they will need to be tried another season.

In his interesting remarks at the Conference Mr. Snell pointed out some of the difficulties experienced in carrying out the trials, and incidentally the difficulties existing in securing true stocks. Several forms masquerading under the same well-known name, many names for the same type, guesses as to origins, mixing of stocks (sometimes easy, sometimes difficult to detect), and the like, all help to confuse the public and retard progress in suppressing such a trouble as the Wart Disease. They cannot all be rectified in one set of trials, but the prospect of an Institute devoted to these problems, so long as they are approached in a spirit of honest questioning and with scientific imagination, leads us to hope for much progress in the future.

Queen Mary and Food Production.—The Royal Horticultural Society's Food Production Exhibit, staged at the Exhibition of the Women's Institutes held at the Caxton Hall, Westminster, from October 25 to 28, was inspected by her Majesty the QUEEN, who was accompanied by the Princess MARY. Her Majesty and her Royal Highness showed great interest in the various models and specimens staged, and at the close of their inspection expressed their keen appreciation of the work the Society was doing, and wished it every success in its work of furthering increased food production in orchards, gardens, and allotments throughout the country. The Society's exhibit has this year been sent to no fewer than twenty-six important towns and centres in England, and in all cases it has been influential in extending a knowledge of garden work. Applications for this display will be welcomed from centres

where Food Production Exhibitions are being organised. The whole exhibit occupies a space about 80 feet long by 6 feet wide, and is sent free of cost, with an expert representative who remains in attendance.

Potato Executive Officer for Scotland.—Mr. BENJAMIN MAIN, Sub-Commissioner of the Agricultural Section, National Service Department, Perth, has been appointed Potato Executive Officer for Scotland. His address is 20, Grosvenor Street, Edinburgh.

Award of the Robert White Medal.—The Committee of the Massachusetts Horticultural Society, as trustees for the Robert White Memorial Fund, has selected Dr. VAN FLEET as the recipient of the Robert White Medal for 1918. Dr. VAN FLEET stands in the forefront of hybridisers and his productions include American Pillar and numerous other Roses, Strawberries, Gladioli, Tomatos, a Canna, a Sugar Corn, and a new Gooseberry. He was trained as a surgeon, but now devotes most of his time to experimental horticulture in his garden at Little Silver, New Jersey, U.S.A. At present Dr. VAN FLEET is endeavouring to raise disease resistant Chestnuts, as well as disease-resistant forms of orchard fruits and small fruits and in this work he is utilising the new species introduced into America through the Arnold Arboretum and the Federal Office of Foreign Seed and Plant Introduction.

The Liberation of Bruges.—The recent successes in Belgium have resulted in the liberation of the town of Bruges from the enemy. It is interesting to learn that business at Messrs. SANDERS' nursery establishment at St. Andre, Bruges, has been carried on by the staff during the four years the town has been in the occupation of the Germans. Messrs. SANDERS have received a letter from the manager, Mr. I. MELLSTROM, informing them that he is well, but that the nursery has suffered considerable damage, mainly in broken glass. He also states that they have been able to maintain a portion of the stock of plants. It is regrettable that the head of the clerical department was killed on the day before the town was liberated. During the earlier part of the war business was possible, mainly with America, but in recent times all communication with the head establishment at St. Albans has ceased and there was no knowledge as to whether the nursery was even in existence. It is to be hoped that the many large nursery establishments in and about Ghent may be equally fortunate in escaping total destruction, as the nursery trade of Ghent and Bruges was one of the principal industries of this part of Belgium.

Laelio-Cattleya Linda.—An Award of Merit was obtained by Messrs. J. and A. MCBEAN, Cooksbridge, at the meeting of the Orchid Committee of the Royal Horticultural Society on October 22 for this pretty hybrid (see fig. 74). It was obtained as a cross between C. Dowiana aurea and L.-C. Arachnites (labiata × L.-C. Haroldiana), and is a useful addition to this section of autumn flowering Orchids. The form and fine substance of the flower follow the large flowered Cattleyas used in its production, the unusual tints of its sepals and petals being chiefly derived from L.-C. Haroldiana, one of the parents of L.-C. Arachnites. The sepals and petals are light rose-mauve, with a slight gold shade; the lip is a common mauve-purple with yellow disc, and has broad lines. The flowers are fragrant, and have good lasting qualities which make them suitable for decorative purposes.

A British Tribute to Fallen French Comrades. The wreath illustrated in fig. 75 has been forwarded by the "Comrades of the Great War" to be laid in the Pantheon, Paris, on All Souls' Day. Numbers of the graves of our heroes who have laid down their lives on the fields of France have been carefully tended by the people of France, and the token was the outcome of a desire to render grateful homage and thanks from Great Britain for this sympathetic care and attention. The Hon. VICARY GIBBS undertook to have the wreath prepared in the gardens of Aldenham House, and it was conveyed to France on October 31, bearing the following inscription: "To the glorious memory of our French Comrades who have given their lives for France and the cause of the Allies. From the British Comrades of the Great War. All Souls' Day, 1918."

War Item. Pte. ROBERT BARTOOT, only child of Mr. and Mrs. BARTOOT, Mayfield Gardens, Woolston, Southampton, has been killed in France. While employed at Battalion Headquarters as a runner he was sent back to the transport lines with a message on the night of October 10; he delivered the message, but did not return. His body has since been found, and it appears he was killed by a piece of shell. The many friends of Mr. and Mrs. BARTOOT

FIG. 74.—LAELIO-CATTLEYA LINDA.

will learn with regret of their irreparable loss. Before joining the Army Pte. BARTOOT was inside foreman at Aston Clinton Gardens.

Chamber of Horticulture. A conference of presidents and secretaries of Horticultural Trade Associations will be held at Donington House, Norfolk Street, Strand, on Tuesday, the 12th inst., at 2 p.m. Any society desiring to be represented, and not having received a formal invitation, is invited to write to the secretary, Mr. R. WYNNE, Norfolk House, Norfolk Street, Strand, intimating an intention to be present and asking for particulars.

Publications Received. *Home-Made Pickles and Preserves.* By "Anne Amateur." (London: *Country Life.*) Price 9d. net. *Income Tax and Super-Tax.* (Edinburgh: Oliver & Boyd.) Price 1s. net. *Rats: How to Exterminate Them, and the Law of Rabbits.* (Board of Agriculture and Fisheries.) 1d., post free.

BUD VARIATION IN POTATOS.*

THE subject of this paper has been selected in consequence partly of a recent correspondence in the horticultural press, in which one or more writers have claimed to possess new and distinct varieties of Potatos which were supposed to have arisen by bud-variation. But it was Mr Cuthbertson who first replied (see *Gard. Chron.*, Sept. 7, 1918, p. 102), and replied most effectively, to the claims made. I merely endorsing what he had said and adding further notes from my own experience.

Claims sometimes put forward seem at first sight to have such apparent foundation in fact that an examination of the possibilities for the appearance of new and distinct varieties from bud-variation may be of some interest and value.

In the first place, we need to be very exact in regard to the terms used and the meaning we attach to them, not forgetting that to others the terms may, from habit or custom, convey something different meanings.

This will be seen in the use of the word "varieties." What do we actually mean by varieties of Potatos? For all practical purposes and to all practical growers—a variety is a Potato which is as distinct from all others in regard to its identity as any one child may be when the parents are the happy progenitors of a dozen or more children. In such a family there may be, and there often is, far more family resemblance between the children than can be discovered between seedling Potatos raised from one Potato "apple" or berry, even when this is the result of self-fertilisation and not of any cross between two distinct parental forms.

If we accept "new and distinct varieties of Potatos" to mean distinct varieties, or sorts in the sense above defined, then no one here, probably, will for a moment imagine that there is any but an absolutely negative reply that can be given to the question we are considering. To apply any other meaning to the term varieties is a waste of time.

But that what might more correctly be termed "variations"—rather than varieties do occur by bud-variation is a fact we are all intimately acquainted with. The variety, i.e., the individual Potato plant, remains identically the same, but by processes of which Nature to a great extent keeps the secret, some external modifications are produced, but even then there is no duly attested instance in which such modification has affected anything more than the colour of the skin of the tubers. I know that this is the point upon which the whole question turns, but I have no hesitation whatever in repeating that no other kind of variation has ever been recorded where the claims made rest upon duly attested evidence.

In the case of Potatos, the change of colour may be either an addition of more colour as occasionally in the human subject—or a loss of colour, but generally the latter. The following are among the instances best known to us all:—

BEAUTY OF HEBRON.—This variety gave a variation by loss of the pink colour of the skin, and we then had the well-known White Beauty of Hebron, identical in every character with the original form except in colour of the tuber. It was still Beauty of Hebron, it could never be anything else, although it might seem advantageous, for reasons we need not inquire into, to attach another name to it.

FORTYFOLD.—This old favourite, with its purple and white skin, also gave rise to a white form, known as White Fortyfold.

RECTOR OF WOODSTOCK.—This variety is probably almost or quite out of cultivation now. It was a white, round Potato, raised by the late Mr. Robert Fenn, and introduced by me some 42 years ago. It gave rise to a mottled form, known for distinction as "Harlequin," but the "variation" was still the same variety, and nothing more or less.

KING EDWARD.—This more recently introduced Potato occasionally gives tubers where the pink colour extends all over the surface and not only in parts, and there are other instances which will occur to most of us.

(To be continued.)

* "Do Potatos Give Rise to New and Distinct Varieties by Bud Variation?" Paper read by Mr. Arthur W. Sutton, J.P., at the Ormskirk Potato Conference, October 31, 1918.

HOME CORRESPONDENCE.

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

The Late Mr. E. J. Allard.—All who knew the late Mr. Allard join in sorrow for his loss. I was sure that Professor Bateson would write the sympathetic notice of last week's issue, but nevertheless I have felt some responsibility, for Mr. Allard was essentially a Cambridge man. It is little, however, that I can do beyond saying that I join heartily in all the praise and appreciation of his personality and merit, already so well expressed by Professor Bateson. Mr. Allard was a valuable man to me. He came to Cambridge from Messrs. Sander and Co., St Albans, in 1895, when about 19 years of age, to fill a post in the plant-houses. He remained, doing credit to himself and gaining experience, for all but three years; he then went to Kew, returning to me, after about fifteen months, as foreman of the plant-houses. He held this position for six years and was then transferred by his own desire to be foreman of the outdoor department, a change the possibility of which stands much to his credit for capacity, range of interest and observation, because it is usual only for a foreman to continue in the charge for which his previous experience has chiefly fitted him. He was now senior foreman, and he remained, doing good work, for five years, being then chosen by Professor Bateson for the important position of superintendent at Merton that he has filled with so much credit. He spent about fourteen years at Cambridge, and was foreman for eleven years of that time. Among Mr. Allard's special interests I may mention photography. Almost all the plates in my *Book of the Iris* were from his photographs, and numerous photographs of Cambridge plants appeared in the gardening papers with his articles. For a considerable time he had charge of the meteorological readings, and his records were regarded as highly satisfactory. Mr. Allard was very popular here, and I may say for all his contemporaries that no loss could be more regretted. *R. Irwin Lynch.*

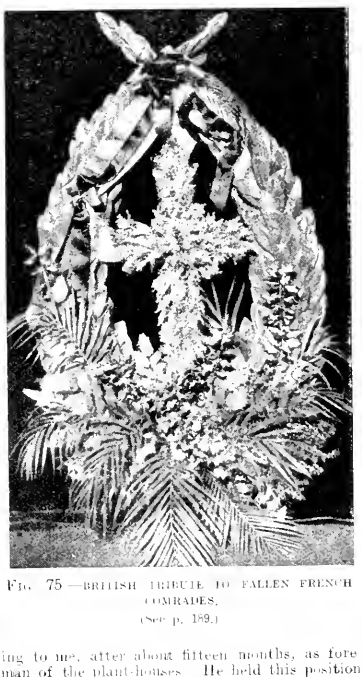

FIG. 75.—BRITISH TRIBUTE TO FALLEN FRENCH COMRADES.

(See p. 189.)

The Late Mr. J. Gardner.—It was with the deepest regret that I learned the sad news of the demise of this exceptionally promising young gardener, who I looked upon, from the time I first knew him, as one of the most likely men to reach the top rank of the profession. When my friend, Mr. Owen Thomas, first approached me as to Gardner joining the staff at Aldenham House Gardens I was somewhat sceptical as to his suitability for a gardener, having in view the very different occupation he was then following, but being assured by Mr. Owen Thomas that he was fully bent on following the same occupation as his respected father, I decided to give him the opportunity. From the first he showed evidence of great ability. Commencing, as all young gardeners should, at the bottom of the ladder, he never showed the slightest signs of shirking the roughest of the work, not once looking back with regret to his previous sedentary occupation, and quickly attained remarkable proficiency. Well educated, and of smart appearance, taking the keenest interest in everything he did, nothing being too much trouble to overcome a difficulty, and leading a clean, upright life, I can call to mind very few young men possessing so great a promise of a brilliant future, and my views were fully endorsed by the rapid strides he made. Young Gardner has laid down his life in a noble cause, and to his aged parents and young widow and family I tender my deepest sympathy. *Edwin Beckett.*

SOCIETIES.

ROYAL HORTICULTURAL.

NOVEMBER 5.—Had it not been for the exhibits provided by the National Chrysanthemum Society the London Scottish Drill Hall would have presented a very bare appearance on this date, as there were few other exhibits. The meeting was fairly well attended.

The Floral Committee granted one Award of Merit and five medals; the Fruit and Vegetable Committee had nothing whatever to do; the Orchid Committee awarded two First-class Certificates and one Award of Merit to novelties.

Floral Committee.

Present: Messrs. H. B. May (in the chair), W. J. Bean, John Green, G. Reuthe, G. Harrow, John Heal, C. R. Fielder, Chas. E. Pearson, Chas. Dixon, John Dickson, E. F. Hazelden, W. P. Thomson, Jas. Hudson, George Paul, E. H. Jenkins, J. M. McLeod, J. W. Moorman, E. A. Bowles, Sydney Morris and H. Cowley.

Two good displays of Chrysanthemums brightened up the hall. The larger one, from Mr. H. J. JONES, was a most artistic contribution, with a backing of sheaves of large blooms of Bob Pulling, Alec. Hervey, the deep crimson Mr. D. Lloyd George, and the pretty yellow incurved named Mr. F. W. Ladds. The other exhibit, from Messrs. W. WELLS AND CO., included fine examples of Princess Mary, Queen Mary, Crantordia and Bernard Goggs, the last a yellow incurved variety. In both these groups autumn foliage was pleasingly associated with the flowers.

Mr. F. H. CHAPMAN staged seedling Nerines: an unnamed variety with slatey-blue shading proved most distinct and suggested many possibilities in future colour variation. Mr. J. J. KETTLE again showed Violets in splendid form, and delightfully fragrant.

AWARD OF MERIT.

Chrysanthemum Elsie E. Gabriel.—An effective single variety of large size but with a stem that is rather slender just beneath the bloom. The colour is deep and rich old rose, with a very narrow, pale-yellowish zone around the disc. Shown by Mr. C. B. GABRIEL, Coxhill House, Chobham.

MEDALS.

Silver-gilt Flora.—To Mr. H. J. JONES, for Chrysanthemums.

Silver Flora.—To Messrs. H. B. MAY AND SONS, for Ferns and winter flowering Begonias.

Silver Banksian.—To Messrs. W. WELLS AND CO., for Chrysanthemums.

Bronze Banksian.—To Mr. J. J. KETTLE, for Violets, and to Mr. G. REUTHE, for Nerines and hardy flowers.

Orchid Committee.

Present: Sir Jeremiah Colman, Bart. (in the chair), Sir Harry J. Veitch, Messrs. Jas. O'Brien (hon. secretary), William Bolton, R. Brooman-White, C. J. Lucas, J. E. Shill, W. J. Kaye, J. Charlesworth, W. H. Hatcher, Fred. Sander, E. R. Ashton, R. A. Rolfe, Pantia Ralli, Richard G. Thwaites, J. Wilson Potter, Stuart Low, and Frederick J. Hanbury.

AWARDS.

FIRST-CLASS CERTIFICATES.

Brasso-Laelio-Cattleya Antoinette Gatton Park variety (*C. Portia coerulea* × *B.-L. Helen*), from SIR JEREMIAH COLMAN, Bart., Gatton Park, Surrey (gr. Mr. J. Collier).—An interesting and charming flower of model proportions, C. Portia dominating in colour and giving improved shape, the rather angular form of the Brasso-Laelia parent being quite suppressed, the only evidence of it being in the fimbriated margin of the lip. The sepals and broad petals are bright rosy-mauve; the lip is reddish-purple, darker in the centre; the disc is yellow with gold lines from the base.

Odontoglossum Lady Veitch Hylandianum × *Armstrongiæ*, from Messrs. ARMSTRONG AND BROWN, Orchidhurst, Tunbridge Wells.—A magnificent flower, exceeding any Odontoglossum previously shown in size, form, and rich colouring. The two parents are "stud" varieties returned by Messrs. Armstrong and Brown. O. Hylandianum having as one of the ancestors a grand form of O. Wilckeanum. The flowers of the novelty have a clear white ground, the inner two-thirds coloured deep carmine purple, the bright dark tint passing through the substance of the segments from front to back. A few irregular white markings appear on the surface, and the lip, which is white in front, has a violet-purple blotch before the yellow crest. The flowers are 4½ inches across; the petals are 1¾ inch and the sepals 1¾ inch in width.

AWARD OF MERIT.

Cattleya Eleanore (*Bowringeana* × *T. M. Roy-croft* × *Hardyana*), shown by Mr. J. E. SHILL. The Ivy Gardens, Englefield Green. The sepals and petals are pure white. The flaring front lip of *C. Hardyana* form and is bright purple in front; the entire is light yellow and the base veined with purplish rose colour.

GROUPS.

SIR JEREMIAH COLMAN, Bart. (gr. Mr. J. Collier), arranged an interesting selection of flowers of hybrid Orchids raised at Gatton Park, and in some of which the Gatton blue-tinted forms of the species have been used as one of the parents, usually with the result that the soft blue shade has passed to the progeny. A fine example was Cattleya Portia coerulea, with a compact, bifloriferous spike of eleven flowers.

A. ASSALDO, Esq., Roschank, Mumbles, showed a selection of cut spikes of hybrids and species flowering in his gardens, including Vanda coerulea, of rich colour, taken from plants grown for years in an unheated house which receives some warmth from an opening in a heated structure adjoining. The temperature of the house in winter is said to be as low as 45° to 50°.

Messrs. CHARLESWORTH AND CO., Haywards Heath, were awarded a Silver Flora Medal for a group of hybrid Odontoglossums, Miltonias and Odontiodas. Novelties included Odontioda Gwendoline (Odm. eximium × Oda. Madeleine), the well-formed flower has a cream white base broadly edged with rosy lilac with dense spotting of reddish purple on the inner parts of the segments, and a rosy lilac coloured lip with a chestnut blotch; and Oda. Joyce (Odm. Harryanum × Oda. Royal Gem), cream white with dark claret markings.

Messrs. ARMSTRONG AND BROWN, Orchidhurst, Tunbridge Wells, were awarded a Silver Banksian Medal for a neat group of rare hybrids, the centre of attraction being Odontoglossum Lady Veitch. Especially noticeable was the new Brasso-Laelio-Cattleya Vuylstekeæ (C. Warscewiczii × B.-L. D. glyano-purpurata), having a finely formed flower of a delicate pink with a decided violet shade which is darkest in the centre of the lip; the disc is clear yellow.

Messrs. SANDER, St. Albans, showed six plants of their fine strain of white-petalled Cattleya Fabia alba, each with a spike of four flowers. The handsome lips varied in tints of purplish-crimson and in the shade of yellow and orange at the base.

Dr. MIGUEL LACROZE, Brymbir, Rochampton, showed Brasso-Cattleya Griselda Brymbir variety (B.-C. Mrs. J. Leemann × C. Lord Rothschild), a good form with cream-white sepals and petals and large, fine, rose-coloured lip with a dye-like disc.

Mr. J. E. SHILL showed Cypripedium Etna The Dell variety (Lecanum Chikaberryanum × Dreadnought), a massive flower of good shape.

J. ASSALDO, Esq., showed Sophro-Cattleya Faboris Assaldo's variety (C. Fabia × S. C. Doris), having a yellow ground and tinged with flaked with reddish-rose.

Fruit and Vegetable Committee.

Present: Messrs. Joseph Cheal (in the chair), Owen Thomas, J. W. Bates, W. Humphreys, A. Bullock, Frank R. Ridley, A. R. Allan, P. A. Tucker, E. A. Bunyard, W. Pope, W. H. Divers, W. Poupart, F. Jordan and Rev. W. Wilks.

NATIONAL CHRYSANTHEMUM.

NOVEMBER 5–6.—The annual show of this Society, which was held in conjunction with the R.H.S. meeting in the Drill Hall, Westminster, was even better than the most sanguine enthusiast anticipated. Most of the classes were well filled with excellent blooms, and competition generally was very keen. The show was formally opened by the President, Sir Albert Rollit, at 12.30 p.m., who announced that the Japanese Ambassador, his Excellency Viscount Chinda, had become a patron of the Society and had written expressing the great disappointment experienced by her Excellency, the Viscountess Chinda and himself that pressure of other engagements prevented them attending.

The trade displays by the RAYDON NURSERY Co. and Messrs. W. WELLS AND Co. contributed largely to the success of the show, and both occupied vases of Silver-gilt Medals of the Society.

FIRST-CLASS CERTIFICATE.

Lavender Queen.—This is a capital medium-sized Japanese variety of excellent form and substance. The colour is a clear deep mauve with a suggestion of orange-yellow at the base. The foliage is ovate-pointed. All-round this should prove a useful market variety.—Shown by Mr. NORMAN DAVIS.

COMPETITIVE CLASSES.

There were only two entries each for competition amongst affiliated societies, but the Challenge Cup and Ist Prize was awarded to the FINCHLEY CHRYSANTHEMUM SOCIETY, secretary Mr. A. Ewbank, Oak Cottage, East Finchley, for a very creditable display of vases of representative types. Of the Japanese varieties Mrs. R. C. Pulling, Wm. Vert, Capt. Fox, and Exam. were particularly good, whilst Mrs. Percy Walsh and Madame Ferlet were equally good Incurved sorts. Jessica and Mary Richardson, singles; Dorothy, Anemone-flowered, and Mme. E. Roudellan, Pompons, were also highly creditable.

The class for 36 Japanese blooms was not contested, but there were three exhibits in the class for 24 Japanese blooms, and these were particularly good. The 1st Prize collection, exhibited by Madame Thuenon (gr. Mr. A. Smith), Convent Gardens, Roehampton Lane, would have won honours at any previous show. The blooms were so large as to tax the accommodation of the regulation board, and there was no suspicion of coarseness. Yellows predominated, and of these F. S. Vallis, Primrose, Mrs. W. Rigby and Lady Talbot were very fine. Amongst the whites Queen Mary and Mrs. G. Drabble merited mention, as also did the light chestnut-coloured Rose Pocket and H. E. Converse, while the crimson W. Vert and His Majesty possessed equal depth and breadth combined with glowing colour; 2nd, Mrs. Chalmers (gr. Mr. A. B. Huddy), Farrants, Bickley, Kent, who put up fine blooms of Mrs. A. Gibson, Mrs. C. Edwards, Mr. R. Lufford and Mr. R. C. Pulling, though the latter's blooms were a trifle uneven; 3rd, Mrs. H. Fellows (gr. Mr. A. J. Smith), Tinsley House, Worplesdon.

No fewer than seven competitors were represented in the class for 12 Japanese blooms, and the chief honour was won by W. H. ALLEN, Esq. (gr. Mr. H. Blakeway), Bromham House, Bedford, with an excellent display. His blooms of Queen Mary, W. Rigby, Charlotte E. Soer and Mrs. Algernon Davis were splendid; 2nd, Mr. H. WOOLMAN, Sandy Hill Nursery, Shirley, Birmingham, whose blooms of Shirley Golden, Mrs. Algernon Davis and Mrs. Lloyd George were particularly good; 3rd, Mr. J. S. KELLY, Crescent Gardens, Esher.

Half-a-dozen good exhibits were forthcoming in the class for 6 Japanese blooms. Capt. C. O. LIDDELL (gr. Mr. E. Jones), Shirenewton Hall, Chepstow, won 1st Prize, showing splendid blooms of such as Thorpe's Beauty, Mrs. G. Drabble and Mrs. E. A. Tickle; 2nd, Mr. J. S. KELLY; 3rd, W. H. ALLEN, Esq., who was 1st with 3 magnificent blooms of Mrs. G. Drabble in the class for 3 blooms, in a vase of any white Japanese variety; 2nd, Madame Thunder. Mr. ALLEN, with equally fine blooms of Mrs. R. C. Pulling, was also 1st for a vase of 3 yellow Japanese blooms; 2nd, Mrs. FELLOWS.

The Holmes Memorial Challenge Cup was won by Mrs. Chalmers with 24 especially good Incurved blooms. Such old favourites as Buttercup, Godfrey's Eclipse, Pantia Ralli, J. W. Wynne and Mrs. J. P. Bryce were very well shown; 2nd, H. BENNETT, Esq. (gr. Mr. G. Dovel, Abbeyfield, Bickley, whose best blooms were of Mrs. T. Hartmann and Ethel Thorp. Mrs. CHALMERS also won 1st Prizes with splendid flowers in the classes for 12 and for 6 Incurved blooms, Mr. BENNETT being second in each class.

Mr. J. W. HESSEY, Matford Lodge, Exeter, with splendid exhibits of the dainty blooms, won 1st Prizes for 6 vases of Pompons and for 6 disbudded Pompons. In the former class the vases of Black Douglas and Mme. E. Dordan were particularly good.

Single-flowered Chrysanthemums made an excellent display. Mr. J. S. KELLY had the best display on a space 8 feet by 3 feet, and also won 1st Prize for a vase of singles, both with unusually good blooms of such varieties as Addie Mason, Nerissa, and Edith Pagram. Mr. H. BUNCHMAN was 1st for 6 vases of Anemone singles and Mrs. CHALMERS was equally successful in the class for 6 vases of large singles; the blooms of Bertha Fairs, Alberta, and Caledonia were magnificent.

The large vase of exhibition blooms arranged for effect by Mr. J. S. KELLY fully deserved the 1st Prize awarded it.

The only dinner-table decoration was by Mr. A. PORTER, St. Albans, who was awarded 1st Prize and received similar reward for a large vase of Chrysanthemums. The class for a vase of 5 blooms of any Japanese variety was a good one, and here G. BLAY, Esq. (gr. Mr. C. Pullen), Raynes Park, won 1st Prize; 2nd, Mr. F. CLARK, Chingford. Dr. HORNE (gr. Mr. E. Colman), Colley Manor, Reigate Heath, was awarded 1st Prize for a vase of single Chrysanthemums.

In the Amateurs' Sections Mr. G. BLAY was especially successful. He won 1st Prizes for (a) 24 Japanese blooms, (b) 6 Japanese distinct, (c) 6 Incurved, in three varieties, and (d) 6 vases of Singles with highly creditable exhibits in each class. Mr. J. W. HESSEY was 1st with 3 vases of Singles and 3 vases of Pompons.

KNEBWORTH HORTICULTURAL.

OCTOBER 26. The Knebworth Horticultural Mutual Improvement Society held an exhibition of fruits and vegetables in the local Council schools on the 26th ult.

The exhibition, which was well attended, was opened by Sir Richard Winfrey, M.P., Parliamentary Secretary to the Board of Agriculture. Sir Richard stated that he had been asked by Mr. Prothero to congratulate the Knebworth Society, and at the same time express the hope that they would continue in the work they were doing. The principal prizewinners were Messrs. Darby, Allen, Sexton, Peacock, and Barker.

Honorary exhibits included fine collections of fruit and vegetables from the Earl of Strathmore and from C. A. Cain, Esq., J.P., respectively.

At the conclusion of the prize distribution the vegetables and fruits were sold by auction. One dish of Pears sold for £10. The sale realised £70, which was given to the Welwyn Cottage Hospital.

CROPS AND STOCK ON THE HOME FARM.

HARVESTING MANGOLDS.

THE Mangold crop this year is variable: in some districts the yield is excellent, whilst in others many plots are failures owing to the ravages of the Turnip fly, which, for the first time in the experience of many farmers, killed the whole of the plants, and in many others, partially destroyed the crop. In the South of England and the Turnip and Swede crops are poor; indeed, on many farms there are but scanty plants, owing mainly to the drought experienced at the end of June and early in July.

With the absence of Turnips the Mangold crop should be doubly valuable, especially to sheep farmers. In some fields the roots are exceptionally large but whether a thin crop of large roots is equal in point of weight and quality to more numerous medium-sized roots is an arguable question. Personally I favour the larger crop of smaller roots, believing the extra large roots contain more water than medium-sized, more solid specimens.

We had our first frost—6°—on October 1, and more frost may be expected at any time. It will therefore not be wise to risk the loss of a part of the crop from this cause. Some say that frost does not injure Mangolds in a heap, even though they are frozen, provided they are allowed to become thawed without interference. My experience is that frozen roots do not recover.

FIG. 76.—CLAMPING MANGOLDS.

Mangold roots are easy to pull, as they leave the ground readily. The most expeditious method of lifting them is to seize the tops some 3 inches from the crown with the left hand, and with a large knife sever the leaves within an inch or so of the crown; with the same action throw the roots into heaps or in rows, dropping the leaves close to the heaps or rows. The common plan is to build cone-like heaps of about three wheelbarrowfuls, and cover them with the leaves, which are supposed to be sufficient to ward off several degrees of frost. Usually the heaps are allowed to remain a week to dry, and are then supposed to be in a better condition for storing than when put straight into a heap as pulled.

Last season I lost many roots owing to frost affecting them while in these small heaps, or before they were finally covered in the clamp, and I am adopting another plan of storing them this season instead of allowing them to remain in heaps. I am carting them at once into clamps or sheds. The apex of the clamp will be left open some weeks after it is made to allow heat from fermentation to escape before finally covering with soil. Where frost-proof sheds or barns are available no method is more economical in labour than storing them therein, and in no way do the roots keep better, even though the heap is as much as 10 feet deep. With this quantity the building should be well ventilated for some time after storing to allow water vapour to escape. Where such convenience does not exist recourse must be had to the old-fashioned method of clamp building, which can be adopted by anyone, and there is no better system of storing when it is properly carried out. Usually the clamps are made in the field where the roots are grown to save cartage. Select a site as near to the gate as possible, and preferably on the side sheltered from north winds, as this necessitates less protection from that quarter. The width of the clamp may vary according to the quantity, from 6 feet up to 9 feet; build the roots in cone shape to a point, using the larger Mangolds for the walls. The most expeditious method is to tip the cart up in the middle of the heap, working from the centre of the heap in two gangs to the opposite ends (see fig. 76). When the heap is complete, cover with straw, or what is better, Barley or Oat caving which lies closer together and wards off more frost than straw alone, as this is loose, and naturally admits more air. A covering of straw will tend to keep the caving dry, as when dry it is not so liable to frost penetration as when wet. A coating of soil 1 foot thick, dug from a trench made the clamp, should be put on three parts of the way up the clamp, leaving the apex open for at least a month to allow atmospheric moisture to escape. After that period the whole may be covered with straw and soil, introducing ventilators on the top of the ridge at every 3 feet. Four inch drain pipes arranged on the top of the ridge answer well. Where an abundance of straw is available, thatching answers equally as well as the soil covering, and this method is perhaps a saving of time and labour, and certainly keeps the roots dry. When properly protected Mangolds will keep sound until August. *E. Molyneux.*

Obituary.

John Spalding Lindsay. The many friends of this well-known gardener will be sorry to learn that he died on October 18, at Church Road, Richmond, Surrey, in his 76th year. Born in Dundee, he began his gardening career in Lord Kinnaird's garden at Rossie Priory, where, after serving the usual term of apprenticeship, he moved in turn to Kilmaron, Barrington, and Dunmecht, where gardening was then carried on with spirit. Wishing to gain further experience he next crossed the border and gained experience in some of the best gardens of the day, eventually settling down in the R.H.S. Gardens at Chiswick, from whence he was appointed to the post of head gardener at White Lodge, Richmond Park, where, for 33 years, he managed the gardens, most of the time for H.R.H. the Duchess of Teck. He retired in 1902 to enjoy a well-earned rest.

Although comparatively unknown to present-day gardeners, Mr. Lindsay was well known to the elder generation, by whom his well-balanced judgment and high principles were much appreciated, and his services were eagerly sought after as a judge at the principal flower shows in the county. He was one of the original members of the Richmond Horticultural Society, and, as long as his health permitted, was a regular attendant at its meetings.

The remains were laid to rest in the Richmond Cemetery (beside those of his wife) on October 23, amidst many manifestations of keenest regret at the loss of a dear friend. The Queen was represented by Lt.-Col. Dugdale, the Presbyterian Church of which he was an Elder was represented by Elders and Deacons, and the Richmond Horticultural Society by several members of the Committee. *J. F. McLeod*

ANSWERS TO CORRESPONDENTS.

NAMES OF FRUITS: *J. W. B.* 1, Waltham Abbey Seedling; 2, Mannington Pearmain. — *Miss Cruttenden.* 1, Dumelow's Seedling; 2, Golden Noble; 3, Blenheim Pippin; 4, Court of Wick; 5, a deformed fruit, not recognised; 6, Calville St. Sauveur. Will Miss Cruttenden please communicate with the Editors, as a private letter was enclosed with the Apples and no address was given.—*W. F.* A local and unnamed seedling; the fruits are badly infected with Apple scab (Fusicladium dendriticum).

NAMES OF PLANTS: *C. G.* 1, too withered to identify; 2, Circis siliquastrum; 3, Euonymus europæus; 4, Buxus balearica; 5, Indigofera tinctora; 6, Ruscus aculeatus; 7, Osmanthus ilicifolius; 8, Clematis paniculata; 9, Thuya orientalis var. aurea; 10, Pyrus Aria; 11, Berberis vulgaris atropurpurea; 12, Cryptomeria elegans; 13, Ruscus racemosus; 14, Eleagnus pungens aurea variegata; 15, Aristotelia Maqui var. variegata; 16, Griselinia littoralis; 17, Eleagnus pungens aurea picta; 18, E. macrophylla.—*G. M.* Juglans nigra—the Black Walnut.

OLD MUSHROOM BED: *Mrs. E.* The Mushroom bed will be useless for the further production of Mushrooms. Make up a new bed with fresh material, and use the old Mushroom bed manure for vegetable crops or for the Roses.

ONIONS: *Ognon.* The Onions are foreign varieties and their shape is probably affected by packing. 1, not recognised; 2, Yellow Southport Globe; 3, White Southport Globe.

PESTS ON ASPIDISTRA ROOTS: *Perplexed.* Judging from your description the maggot-like creatures in the soil among the Aspidistra roots are the grubs of an Otiorrhynchus—probably the Vine Weevil, and not Mealy Bug. Submerge the pot in tepid water for 24 hours, and most of the grubs will die from lack of air. Another plan would be to shake the roots free from the old soil and repot in fresh, sterilised compost.

TREE FRUITS: *G. H.* The Pear-shaped specimen is Pyrus Sorbus and the red fruited specimen Crataego Mespilus grandiflora, sometimes called Mespilus Smithii and Pyrus lobata. The latter tree is a hybrid between the common Thorn and the Medlar. The fruits of both trees are wholesome, but not often used for food. It is probable that their best use would be for the making of jelly.

Communications Received.—E. C.—M. E.—A. C.—C. B. C.—E. M. B.—W. F. G.—J. F. M.—E. H. J.—J. P.—E. T. E.—G. H.—W. W.—J. L.—G. E.—T. E. T.—(Thanks for 1s 6d, for R.G.O.F. box)—C. A. W.

THE
Gardeners' Chronicle
No. 1664.—SATURDAY, NOVEMBER 16, 1918.

CONTENTS.

ILLUSTRATIONS.

THE SURVIVAL OF WEED SEEDS.

THE old distich

"One year's seeding,
Seven years' weeding"

expresses a greater measure of truth than is generally realised. Every gardener knows that at any time weeds are allowed to run to seed a seed freely there will be trouble for years after, entailing great expense and labour to rid the soil of its undesirable occupants. The reason for this lies in the practical behaviour of the weed seeds. If they were all to start into growth together the season after they were shed it would be possible to effect a clearance once for all, but this does not happen. A certain percentage of the seeds remain dormant in the soil for varying periods of time and often only germinate after the lapse of years.

The duration of this resting period is determined either by a natural tendency of the seeds or by the fact that some of them are buried in the soil under conditions that are not suitable for germination, so that growth cannot begin. If circumstances are favourable and the seeds remain near the surface of the soil, the bulk of them begin to germinate as soon as the proper season comes round. In many cases, especially among leguminous plants, hard seeds occur which fail to grow at first but spring into activity at irregular intervals, thus keeping up a succession of weeds from a single sowing.

A more prolific source of trouble, however, probably arises from the burial of seeds at various depths. In the course of cultivation by trenching, digging and hoeing, the relative position of the particles of earth is constantly changing, and a clod of surface soil, full of resting weed seeds, may be carried down to a depth of several inches or even a couple of feet. Worms also are very active agents in carrying down the seeds. Very small seeds, such as those of Poppy, Pimpernel, Shepherd's Purse, and Groundsel, cannot grow if they are buried more than an inch or two, and if any such individual does attempt to germinate, the little seedling perishes forthwith, from sheer inability to force its way through the overwhelming mass of earth above it. Larger seeds, as Charlock, Black Bindweed and Convolvulus can grow satisfactorily from a depth that is impossible to the tiny seeds, but farther down even these are forced into a state of quiescence. As time goes on many of them succumb and rot, but a decreasing percentage resist all the influences tending to decay, and retain their power of growth in some mysterious way, waiting patiently for an opportunity of fulfilling their proper destiny.

These buried seeds are the ones that give so much trouble as the years go on. The same processes of cultivation that carry down the new seeds to the lower depths bring up the dormant ones to the surface, where the conditions of moisture, air and warmth are such as to encourage growth. Year after year these processes of burial and exhumation go on, and even though no fresh weeds are allowed to fruit, the surface soil is kept provided with a stock of seeds ready to carry on the species if they are undisturbed.

The length of time these buried weed seeds can retain their power of growth is a matter of great practical importance. Various ideas on the subject are rife, but many of them give estimates that are probably much exaggerated. It is an undoubted fact that when grass land or old waste land is broken up large crops of such weeds as Charlock or Poppy are wont to appear. The origin of these seeds is in many cases still a mystery as it is not always possible to show that the land in question has ever been under the plough. In many cases, however, a previous history of cultivation can be proved, and then it is quite feasible that the crops of weeds have arisen from long buried seeds.

Some experiments recently carried out at Rothamsted have proved conclusively that seeds of some common weeds of cultivated land can survive even when they are buried in soil that has been laid down to grass for periods so long as fifty-nine years. Couch, Knot-grass, Field Speedwell, Charlock, and Black Bindweed were among the weeds that sprouted from an old cultivated field that was turned into a meadow in 1856. Part of this meadow, as Gooseacott Field, was grassed over in 1865, so that it has not been ploughed for more than thirty years. Nevertheless there is a large number of living weed seeds at present. From a cubic foot of soil 1 foot square by 1 foot deep seventy four such seeds were hatched, every one of which germinated and produced a healthy seedling. No fewer than fifty-two of these were seeds of Knot-grass, but Pimpernel, Speedwell, Couch and Poppy were well represented, and Black Bindweed, Wild Pansy, and Field Speedwell occurred in less quantity. An examination of the old records of the history of the field shows that these weeds were present when the field was under arable cultivation previous to its conversion into pasture, and that Knot-grass was exceedingly abundant being one of the worst weeds among the crops. In such a case as this the greater number of the arable weed seeds are found at some depth in the soil, most of them being from 5 to 12 inches below the surface. Originally, of course, these seeds were also abundant in the surface soil, but in the course of years they have disappeared from various causes. Under such circumstances a certain number are carried down by earthworms or gradually washed down by rain through the cracks and crannies of the soil, but most of them start into growth only to find themselves crowded out of existence by the new surface vegetation. In this way, as time goes on, the store of seeds in the top soil is depleted. The lower depths of soil, on the contrary, are not favourable to germination, and the seeds that are buried there have no inducement to begin growing. As was mentioned before, large numbers of these seeds rot, but a certain proportion retain their vitality and are able to start into growth if their environment changes to one that is suitable for germination.

While these experiments have shown that seeds of certain kinds of weeds can survive burial for sixty years, it must not be assumed that this represents the limit of time that life can be maintained under such conditions. More evidence of a direct nature is needed, but sufficient data has been collected to show that the buried weed seeds may constitute a very real danger to the farmer and gardener when grass land is broken up or when land already in tillage can be worked more deeply than usual. The history of grassland is often uncertain, the lower depths of cultivated land may have remained undisturbed for generations, so that it is impossible to foretell the results of interference. It is therefore most essential that careful watch should be kept when such interference takes place, as otherwise it may easily happen that very troublesome weeds may regain a strong position from which it will be difficult to extirpate them.—*Horace T. Brandley.*

ORCHID NOTES AND GLEANINGS.

CATTLEYA VALENCIENNES.

HYBRID Cattleyas with *C. Bowringiana* as one of the best parents are invaluable for flowering in autumn and winter, producing a profusion of brightly coloured blooms when out door flowers are almost over.

The latest addition to the class, raised between *C. Dowiana aurea* and *C. Mrs J. W. Whiteley* (*Bowringiana* × *Hardyana*) by H. T. Pitt, Esq., Bessina, Stamford Hill (gr. Mr. Thurgood), and now flowering in his gardens, brings a distinct improvement into this useful section.

A flower sent us resembles an enlarged form of *C. Mrs J. W. Whiteley* or *C. Mantinii* (*Bowringiana* × *Dowiana aurea*), but the lip is broader and more flatly expanded, its undulated margin disclosing the influence of *C. Dowiana* in the last crossing. The sepals and petals are bright purplish mauve; the lip ruby-crimson in the centre shading to purplish mauve towards the margin. There is no yellow disc, but a series of branched, very thin orange lines running from the base to the centre. The column is white, and gives added effect to the general dark tints of the flower.

HYBRID ORCHIDS.

(*Continued from September 21, p. 118.*)

Hybrid.	Parentage.	Exhibitor.
Brassocattleya Alba ..	*C. Mantinii* × *B. C.* Madame Hye	F. J. Hanbury, Esq.
Brasso-Laelio-Cattleya Gatton Princess ..	*B.-L.-C.* Mackaya × *C.* Schroederae	Sir J. Colman.
Cattleya Doman ..	*C. labiata* × *C. Mossiae*	Sir J. Colman.
Cattleya Mrs. J. Anzalda ..	*C. labiata* × Suzanne Hye de Crom	H. T. Pitt, Esq.
Cattleya Valenciennes ..	Ayida × Warscewiczii F. M. Reynolt	Flory and Black.
Cypripedium Arco ..	Dowiana aurea × Mrs. J. W. Whiteley	H. T. Pitt, Esq.
Cypripedium Damascus ..	Hera × Dreadnought	R. Hamilton Smith, Esq.
Cochlogyne speciosa Colmani ..	Earl Tankerville × Dreadnought	Sanders.
Laelio-Cattleya Cardinal ..	*speciosa major* × Colmani	Sir J. Colman.
Laelio-Cattleya Gaskellpumila ..	*L. C.* Barbarossa × *C.* Hardyana	H. T. Pitt, Esq.
Laelio-Cattleya Geoffreyaneops ..	*L. pumila praestans* × *C. Gaskelliana*	Sir J. Colman.
Laelio-Cattleya Thez ..	*C.* Geoffreyana × *L. anceps*	Sir J. Colman.
Laelio-Cattleya Triselva ..	*C.* Warscewiczii × *L. anceps Schroederae*	J. and A. McBean.
Laelio-Cattleya Tunnidii ..	*C. Iris* × *L. C.* Elva	Sir J. Colman.
Laelio-Cattleya Molly Collier ..	*L. C.* luminosa × *C.* Lord Rothschild	Sanders.
Laelio-Cattleya Mrs. Bernard Howard ..	*L. C.* Bella × *C. Dowiana aurea*	Sir J. Colman.
Laelio-Cattleya Olaf ..	*C.* Harrisoniana × *L. C. G. G.* Whitelegge	F. J. Hanbury, Esq.
Laelio-Cattleya Parysatis viduacea ..	*L. C.* Phryne × *C. Gaskelliana alba*	Sir J. Colman.
Laelio-Cattleya Reuleri ..	*C. Bowringiana Blucina* × *L. pumila praestans*	Sir J. Colman.
*Odontioda Colinge var. Hector ..	*C.* Fabia × *L. C.* Black Prince	Sanders.
Odontoglossum Perfection ..	Odx Coronation × Odm crispum Raymond Crawshay	Armstrong and Brown.
Odontoglossum Serbia ..	crispum Leonard Perfect × Amandum	Armstrong and Brown.
Odont. glossum Violet Queen ..	Ossulstonii × Aglaon	Armstrong and Brown.
Sophro-Laelio-Cattleya Sax-Oriole ..	Illustrissimum × Armstrongiae	Armstrong and Brown.
	S.-L.-C. Saxa × *L. C.* Golden Oriole	Mrs. Bruce and Miss Wrigley
Sophro-Laelio-Cattleya Waruhamensis ..	*S.-L.-C. insignis* var. Olive × *L. C.* Geo. Woodhams	C. J. Lucas, Esq.

* Shown at R.H.S., October 22, 1918, as Odont. o la Hector.

TREES AND SHRUBS.

GARDEN VARIETIES OF CEANOTHUS.

WHILE many of the true species of Ceanothus flower during the spring or early summer, there is a group of garden varieties the members of which bloom from July onwards. These have been raised on the Continent, mainly by the crossing of Ceanothus americanus and C. azureus. This section of Ceanothus is of considerable value in the garden. The different kinds may be treated in various ways. They are very attractive in the shrubbery border, but perhaps the best way to grow them is in beds or masses. A fairly warm soil not too heavy in texture suits these Ceanothuses best, and a light, sunny position is desirable. When grown in beds or clumps a good plan is to prune the plants in February or March. The preceding year's branches may be cut back to within two or three eyes of the base, and any old and exhausted wood cut out, as well as weak shoots. The plants will break freely into growth in due course, and flower profusely during the latter part of the summer. At such times as these, when labour is scarce, some at least of the flower beds might be planted with permanent occupants, notably these Ceanothuses, that is, where they are not given up solely to vegetables. Garden varieties of Ceanothus may be increased from cuttings formed of half ripened shoots inserted during the summer. The cuttings should be placed in a frame kept close and shaded till roots develop. From this circumstance, and the fact that the plants soon attain a saleable size, most of the varieties may be purchased cheaply. They are generally grown in pots for convenience of removal, and when this is the case early spring is a suitable time to plant them, as they have ample time to become established before winter.

The following is a selection of the very numerous varieties: Albert Petit, rosy-lilac; Arnoldii, pale blue; Ceres, soft rose; Coquet form, carmine-pink; Gloire de Plantieres, light blue; Gloire de Versailles, rich blue; Indigo, the deepest blue, but less hardy than most of the others; Ilus Rose, rosy carmine; Lucy Moser, deep blue; and Marie Simon, rose.

The late-flowering Ceanothus azureus grandiflorus has beautiful blue flowers. This is a particularly desirable wall plant; specimens trained to walls will grow to a considerable height, and continue to bloom till the early frosts. *W. T.*

LONICERA TRANSLUCENS, CARRIERE.

THIS attractive bush Honeysuckle is a native of the Himalayas. It is undoubtedly an ally of the well known Lonicera quinquelocularis, but the leaves and flowers are larger, the latter also being a richer yellow. As a lawn specimen or in the shrubbery border L. translucens forms an attractive bush, 6 to 8 feet, occasionally more, in height, and as much in diameter.

It forms a deciduous shrub, producing its yellow blossoms freely in early June, and the flowers are followed in most seasons by numbers of attractive and distinct, transparent, white fruits. At a distance they might very reasonably be mistaken for White Currants during late August and September.

Photograph by E. J. Wallis.

FIG. 77.—FRUITING BRANCH OF LONICERA TRANSLUCENS.

The cultivation of the plants in this country presents no problems. Cuttings root readily in a frame during late summer, and seeds germinate freely when sown as soon as the fruits ripen. The bushes thrive in most soils, but do best planted in positions sheltered from the east, as the tender young growths and flowers are liable to damage by late spring frosts. American horticulturists tell of the beauties of the bush Honeysuckles in flower and fruit in their country, but the sharper contrast between the American winter and summer favours the development and pollination of the flowers. *J. O.*

THE ROCK GARDEN.

VERONICA FILIFOLIA.

ONE adopts this name with some doubt as to whether it should not be V. filiformis, yet it is the designation used by growers who are, if anything, rather pedantic about nomenclature, and it is well known that the names of the plants of the genus are far from well settled. One need not, however, quarrel with the name of filifolia, which so well describes the narrow, beautifully formed foliage. Mr. Reginald Farrer, who has a happy unconventional manner of describing plants, speaks of it as growing "erect into a filmy fuzz of fine greenery, starred with china-blue blossoms," and one can hardly improve upon this description, so well does it denote the appearance of the plant when on the level. In a chink in the wall garden or between the upright stones of the rockery it has a tendency to become somewhat pendent, and looks better in such positions than on the flat. It is one of the most charming of all the smaller Speedwells, and is so easy to cultivate that it deserves the thought of the intending buyer of plants for the rock garden or retaining wall. The plant lasts longer in bloom when growing in a partially-shaded place, and even in a part of the wall garden receiving a mere modicum of sun it flourishes and produces its charming china-blue flowers in a satisfactory way. *S. Arnott.*

NOTES FROM AMERICA.

BIBLIOGRAPHY OF GARDENING.

MR. ROBERTS' letter in *Gard. Chron.*, Aug. 17, p. 71, is a temptation to indulge in further comments on bibliography. In the first place, I may say that the check list I mentioned on p. 57 is a very modest affair, primarily intended to assist in the purchase of books for the Department of Agriculture Library, and arising as an outgrowth or by-product of a very much more extensive project, a comprehensive catalogue of botanical literature, in the widest sense, which was founded by Mr. Frederick V. Coville. The compilation of this catalogue has been carried on for some fifteen years under his authority, and a great proportion of the work has been done by my colleague, Miss Atwood. Of this catalogue we are rather proud, but the horticultural literature is my special care, and, as may be imagined, likely to prove an absorbing hobby. So far as bibliography is concerned, my own aim is that of collecting materials for such work, rather than an attempt to compile anything authoritative. If I could formulate a plan, with any reasonable expectation of its realisation, it would probably take the form of a census of the early horticultural books located in the principal accessible collections of the United States, with information as to first editions where not accessible, and references to critical bibliographical and biographical materials which have been published elsewhere.

There are several very good reasons for limiting my plan to books published before 1800—though, of course, I actually deal at present with a large amount of nineteenth century literature besides. In the first place, while it may seem fairly presumptuous for anyone to attempt the bibliographical study of very early horticultural books where so few are available, as compared with collections in England, it is our very lack of the books themselves which makes exact knowledge of them so acutely necessary. Secondly, the undertaking was not begun early enough to give any assurance of my being able to cover the entire field down to modern times—the horticultural literature published in England alone during the last century would be a "life-sized" task for a bibliographer—and finally, the 1800 limit was happily set for me by the circumstance that American horticultural literature practically began with the nineteenth century, and has been pretty thoroughly covered by L. H. Bailey's "List of American Horticultural Books" in the *Standard Cyclopaedia of Horticulture*, v. 3, pp. 1523-1652. While the latter is, in the strict sense, a mere list rather than a bibliography, it is so nearly comprehensive as to titles that it may well serve as a starting-point for any critical bibliography which may be under-

taken in the future. In the meantime it answers the immediate need as regards American books, and so, while perhaps 1840 or 1850 might have been a more logical point of demarcation for European publications, the initial date of American horticultural literature seems to be the more convenient one for my purpose.

I heartily subscribe to Mr. Roberts' suggestion of the comprehensive bibliography of gardening which might be accomplished by co-operation. While a bare list of book-titles might be a comparatively simple undertaking, such a skeleton is always more or less unsatisfactory to anyone who wants to know about the relationships and peculiarities of books; hence it seems to me that any really thorough bibliography which might be attempted nowadays, would not only be largely annotated, but should include exhaustive references to critical work—all too little at most—which has been done on difficult or interesting books. Such annotation ought, of course, to be in charge of persons richly informed in the history of gardening and the lore of garden literature, and of a topical, rather than a chronological or alphabetical arrangement were followed, it would be possible to distribute this most important task of editorship among those specially interested along different lines—as fruit culture, vegetables, seed trade, fruits, and landscape art. Such a plan would probably result in other irregularities of treatment, but on the whole would bring to the work a measure of sympathy and insight which could more than compensate for the occasional "more feet" and details. A classified card may cover all the technicalities of size, type, indented or flush, full" names and dates of publication, and yet be very unsatisfactory, but a well-kept bibliography has much to recommend it, and I am sure that it would be a very great help to many writers and to others who delight in reading them in that "at the core of gardening."

W. E. Warner.

THE ALPINE GARDEN.

GENTIANA SINOORNATA.

If for no other reason than its late period embracing October and November this brilliant species is worthy of the effort one has to show our still indigent but cultivated list of choicest Alpines. Not new to me, having grown it and seen it on many occasions as a child, it was not till I chanced upon a frame full of it in Mr. Perry's nursery at Enfield dazzling in brilliant in the tidiest sunlight on the last day of October, that I realised what a gem the plant was at its best. At Enfield the species is grown in two positions, sun and shade, and a novice might decide on the instant which of these two situations is the more suitable one. That certain Gentians respond most promptly to sunlight and while apparently revelling in it to the fullest measure, also display their flowers to the greatest advantage, is well known. Of these things there was a clear demonstration. All the plants were growing in pots plunged to the rims, and while involving little or no attention, were obviously in the uniformly cool soil conditions beloved of the plant. Of trailing habit, the solitary flowers terminating the stems are of the size of a small Gentianella. Externally they are marked by a pale cream coloured bands running the full extent of the corolla, a thin line of rich blue passing through each band. When the flowers expand, however, nothing is seen but the brilliant blue. From the cultural standpoint, a mixture of peat, loam and leaf mould in nearly equal parts appears to suit it well, with no lack of root moisture during the season of growth and onward to the flowering period. It will be welcome news to cultivators that these trailing species, inclusive of the new and exquisite G. Farreri, root freely from stem cuttings, a method to be made much of, seeing that much Gentian seed is somewhat erratic in germinating. With half a dozen plants for a start, and half of these used for propagation, a stock worthy of this brilliant Alpine could soon be raised. *E. H. Jenkins.*

HARDY FLOWER BORDER.

CALLIANTHEMUM RUTAEFOLIUM.

The name of Ranunculus rutaefolius has too long been applied to this plant. It is worthy of that of Callianthemum, as it is one of the most beautiful of high alpine plants, with exquisitely cut leaves, like those of the Rue, and of a glaucous hue not easily equalled by those of any other plant. The leaves are almost prostrate, and a little above them rise the white golden centred flowers, of wondrous size for such a dwarf plant. It is one of the finest gems from the higher parts of the alpine regions of Europe and Siberia, where it loves damp places. It is said to be rare in its native habitats, and is quite uncommon in British gardens.

It is, however, easily managed in cultivation and with me grew well on a cool border of rich soil, loam and peat, but likes a sandy soil. I lost it in a very dry season. Where it

THE ALPINE MEADOW RUE (THALICTRUM ADIANTIFOLIUM) WITH SOMETIMES LIGHTLY TINGED WITH PINK.

was difficult to keep in good condition during moisture except through the rain for days, and in dry weather in summer it received a thorough soaking with pure water almost every evening. It responded to this treatment and flowered well annually. My specimen did not increase rapidly, and remained a small plant until it was lost in the cataclysm caused by having to remove to another garden in a dry summer. C. rutaefolium is occasionally increased by division when the plants are large enough, but this method of propagation should only be attempted with great care as soon as flowering is over. *S. Arnott.*

THE MARKET FRUIT GARDEN.

EXTRAORDINARY MARKETING SEASON.

Growers who were lucky enough to have anything to sell will not soon forget the marketing season of 1918, for it is very unlikely that such prices will ever again be recorded. My best gross return for Plums was 23s. per half-bushel of 25 lbs. Very few sold at less than 35s., whilst the highest return was 40s. for Early Rivers. Even Victorias, which are generally the cheapest Plums grown here, made 35s. to 36s. In previous years I have never received more than 8s. per half-bushel for Plums, and that only for a few of the earliest, whilst mid-season varieties have been as low as 2s. 3d., and even went down to 1s. 3d. in 1914. My best return for Apples was 52s. 6d. per half-bushel of 20 lbs. for Allington, other remarkable prices being 50s. for Blenheim Pippin, 40s. for Cox's Orange Pippin, and 36s. for Charles Ross. All these prices were, of course, only for selected fruit, and in each case they refer to one consignment only, so small was the quantity of fruit available. More extraordinary still, perhaps, were the prices ruling for varieties that are usually almost given away. Domino, for instance, almost unsaleable in some years, realised 15s. per half-bushel for the best grade whilst Royal Jubilee, which sold for 1s. to 1s. 6d. in 1914, reached 9s. to 10s. this year. All the above prices are for "firsts" only.

CONTROLLED PRICES.

It cannot be said that the attempt to control prices of Apples met with much success. The fruit of a general controlling order hung over growers' heads for so long, and caused so much

confusion that the greater part of the crop was marketed before the order came into force. As a result, by the time the restrictions were imposed there was hardly any fruit to control. The only people to suffer were those who were local enough to keep late cooking varieties like Bramley's Seedling until their proper season. In fact, the net result of the order was exactly the opposite of that intended, namely, to encourage the early marketing of immature Apples, and force up the price of such varieties as were not controlled. It will be noticed that, in the above-mentioned prices, Allington and Blenheim made more than Cox's Orange Pippin, which is usually much more valuable. That is simply because the first two varieties were sold after the controlling order came into force, whilst Cox's Orange Pippin was sold before.

The marketing season was a short one. Usually I have Apples stored until February and go on selling briskly through November. This year all were sold by the third week in October. Even if there had been sufficient to make keeping worth while, the controlled prices are not good enough to cover probable losses in storage. Marketing of all crops, which started with Black Currants on June 24, lasted just about four months. I have now to look forward

to eight months without a sale. One wonders what would have been the fate of growers in such a season of scarcity if markets had been full of imported fruit, as in normal years.

GREASE BANDING.

Authorities recommend that grease bands should be in position on the trees early in October, as the female winter moths often start to ascend the stem at that time. This year they are late. At the close of the month many males were being caught, these being attracted to the glistening bands at night, but no females of this species had appeared. Several wingless females of the mottled umber moth, as well as a number of the males, were, however, trapped towards the end of the month, and many Apple suckers became victims.

Most makers of banding materials leave purchasers in doubt as to the amount required I find that a 25-lb. box of the so-called grease is enough for 650 trees with an average girth of 15½ inches, making the bands 5 inches wide. This works out at 4 lb. for 26 trees, or nearly 4 lb. per 100. The grease, bought in bulk, costs 2s. 3½d. per lb., and a man was occupied about 5 hours in applying it to 100 trees. At the standard wage of 32s. per week the labour would cost about 5s. per 100 trees, which, with the necessary material, brings the total up to 12s. 2d. per 100, or about 36s. per acre where the trees are planted 12 feet apart each way. There are, of course, plenty of cheaper greases on the market. This particular material, an importation from America, was chosen because it has been found to do no harm when applied direct to the stem, so that no paper bands are required. This means a great saving in labour and some economy in material. Moreover, it can be relied upon to remain sticky up to April, whereas inferior greases dry up and have to be renewed. Lastly, the latter must be applied in bands about 7 inches wide, whilst 5 inches proves all that is necessary with the American grease. Altogether, then, the dearest should prove most economical in the end.

SPRAYING VERSUS GREASE BANDING.

Previously I had not adopted grease banding on anything but a small experimental scale, relying upon spraying to keep caterpillars down. Every spring it is necessary to spray against aphides, and it is easy to make the wash poisonous to caterpillars at the same time. In normal seasons, when caterpillars were not particularly numerous, this plan kept them under sufficiently, and was, of course, very much cheaper than grease-banding. The phenomenal plague of caterpillars during the past two years proved, however, too formidable a task to deal with by spraying alone. The attack develops so rapidly that it is almost impossible to get over the ground fast enough with the spraying apparatus. If we are to expect such hordes of the pests, every possible weapon must be used against them.

Grease-banding will not render spraying unnecessary. It is effective only against the winter moth group, which have wingless females, and these are not the only species that attack fruit trees. Moreover, there are many trees that cannot be banded properly—bush-trained trees, for instance. There must be a stem at least 4 feet high for effective banding. Bands applied 2 feet from the ground catch most of the moths, but not all. Some of the females, it is thought, are carried over by the males. Banding 4 feet up should catch all the females, but some of them lay their eggs on the stem below the band. This does not matter if the grease remains sticky well into April, as the young caterpillars are then trapped as they attempt to reach the branches. Other trees that can hardly be banded are such as have bushes under them, the latter having grown up to the lower branches of the trees. Presumably some of the moths could ascend by way of the bushes. Thus grease-banding has several limitations. *Market Grower.*

A VISIT TO ADMIRAL BEATTY'S GARDENS AT ABERDOUR.

On a beautiful morning, towards the middle of October, I went from Edinburgh, on the invitation of Lady Beatty, to Aberdour House, which is pleasantly situated among sheltering woods above the Firth of Forth, not far from North Queensferry. As I passed over that stupendous construction of modern scientific giants entitled the Forth Bridge I saw, far below, some of the most famous cruisers in the world, conspicuous among these being the *Lion*, whose name will go down to posterity with that of the *Victory*, just as that of her world-renowned Admiral, Sir David Beatty (whom I recently visited on board the *Queen Elizabeth*), will always hereafter be historically associated with those of Grenville, Drake, and Nelson.

Aberdour House, where the Admiral and his lady have made their secluded home, was, I have been informed, a former residence of the Earls of Morton. It looked especially attractive at the period of my visit, nestling among its sheltering woods, with their wondrously transfiguring autumnal hues, in that calm sunset of the year. For it was a benignant day of utter peace, with the sunlight ever and anon stealing out from the pure regions of the slowly gliding clouds, in whose very motion was the dreamfulness of repose, and illuminating the radiant, yet swiftly fading leaves.

In circular borders in front of the mansion-house, and all throughout the exquisite garden, were some of the finest hardy herbaceous flowers, notably Dahlias, Gladioli, and Chrysanthemums, and many perceptibly fragrant, late-flowering Roses (among which Crimson Emblem—a great favourite of Lady Beatty—Rayon d'Or, Constance, and Juliet are usually recognisable) were still in marvellous bloom. Lady Beatty is gradually forming, like Sir Herbert Maxwell at Monreith, and the Countess of Stair at Lochinch Castle, an enviable and grandly representative collection of the "Queen of Flowers," also of Oriental and American Lilies, including many noble specimens of the Himalayan Lilium giganteum, which in a few years will become, in all probability, grandly impressive. Quite close to the picturesque garden, a veritable haunt of ancient peace, the ruins of the old Castle impart a glamour of historic fascination to the scene.

Lady Beatty, after luncheon, at which were present several Commanders of the Fleet, showed me some treasures of the greatest interest, conspicuous among which was a flag of the *Lion* which proudly and defiantly waved from that flagship of the heroic Admiral at the Battle of Jutland, where—

"Serene, amid the thunderous battle-storm,
Where flames of Hell lit up the lurid scene,
Shone, like Trafalgar's Pride, his fearless form,
On those dread heights where Nelson's soul has been.
"In that deep darkening atmosphere of death,
Where men stand calm, to conquer or to die:
Where Hope still lived, and breathed immortal breath,
Flashed the swift lightnings of his eagle eye."

I did not see the Grand Order of the Legion of Honour, which was created by the great Napoleon, as Sir David had that splendid French conferment on board the *Queen Elizabeth*, but I had the privilege of seeing other proud possessions of even greater beauty. Enclosed in a casket with a radiance almost as luminous as their own, were the Imperial Orders of the Rising Sun, presented to the Admiral by the Emperor of Japan.

So ended my first visit to Aberdour House, which, made very memorable by the kindness of Lady Beatty, will ever shine vividly in the regions of remembrance. *David R. Williamson.*

The Week's Work.

THE KITCHEN GARDEN.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

Mushrooms.—Very few Mushrooms have been obtainable from open fields this season, but the wet autumn appears to have been unusually favourable to their growth on beds both in the open and under cover. An excess of fire-heat is harmful in the Mushroom-house; this season there has been no necessity to use fire-heat at all. A temperature of 55° is suitable; a higher temperature has a weakening effect upon the Mushrooms and also dries up the beds unduly. There should be no necessity to water a Mushroom bed to develop the first crop of Mushrooms, nor should moisture be given until the first crop has been cleared and signs of exhaustion of the bed are apparent. Success largely depends on having a house which conserves both heat and moisture, as this obviates the need for an early use of the syringe or watering-pot. When water is absolutely necessary, sufficient should be given in a tepid state to moisten the whole bed. A light sprinkling of common salt over the surface before watering will encourage a quick development of the buttons, or the water may be slightly impregnated with salt. A layer of soft, strawy litter placed over the bed will help to conserve both heat and moisture, and nothing more need be done in this direction until the successional crop appears. When gathering Mushrooms, twist them out of the soil, stems and all, as the old stumps are liable to decay and cause a destructive mildew to spread over the whole bed. Continue to collect horse-manure and prepare to make fresh beds as described in former calendars. In preparing the manure, endeavour to get rid of the gases of fermentation without greatly impairing the heating power of the material. Never allow a heap to become saturated with rain, or allow it to remain for a week or longer without turning it, and do not be in too great a hurry to make the bed.

Jerusalem Artichoke.—If not already done, the stems of Jerusalem Artichokes may be cut down to within a foot of the ground. The tubers may be dug if the ground is required, or sufficient should be lifted and stored under the coolest conditions possible to supply requirements for a few weeks.

Brussels Sprouts.—Our earliest plants of Brussels Sprouts are in splendid condition. The seed was sown very early in the spring, and the seedlings transplanted at 3 feet apart in rich, firm ground that has been kept clear of weeds. Planting in loose ground and overcrowding cause the plants to grow tall and the sprouts large and loose. Dwarf Gem is one of the best varieties for all purposes.

Cabbages and Coleworts.—The midsummer plantings of these green crops are in fine condition for use. Coleworts are giving fine crisp heads. This winter green may be planted closely together in late summer when many other crops are over, and should be grown extensively.

FRUITS UNDER GLASS.

By W. J. GUISE, Gardener to MRS. DEMPSTER, Keele Hall, Newcastle, Staffordshire

Strawberries.—At Keele we plunge pot Strawberry plants up to the rims of the pots in a bed of decayed leaves in very shallow frames, and in this position they are capable of passing through the sharpest weather without danger of the pots bursting. Moreover, the soil retains sufficient moisture for a long period without need of water. Some growers stand the pots on vacant shelves in cold fruit houses, but this method involves frequent watering of the roots, especially during dry, windy weather.

Successional Peaches and Nectarines.—The trees of Peaches and Nectarines in successional houses are defoliated, and attention should be given to the cleansing, and, if necessary, painting of the interior of the houses. Winter prun-

ing should be a light operation, it all shoots not required for furnishing the trellis or training next year were cut out directly the last fruits were gathered. If the shoots are trained 4 inches apart they will have sufficient space; it is not advisable to train in much strong wood, rather give preference to medium sized, well-ripened shoots, as these are always the most fruitful. Where large trees have furnished the trellis it may be necessary to prune the leaders back to the next most promising shoot. As soon as the trees are pruned and loosened from the trellis, every portion of glass, iron, and wood work should be thoroughly cleansed, the walls scraped, and coated with fresh lime mixed with a little sulphur. Carefully wash the shoots and main branches of the trees with soapy water, or a solution of Gishurst Compound, 4 ozs. to one gallon of warm water. Scale insects and red spider are troublesome pests, and it is only by stringent precautions that they can be eradicated. The borders will require attention, and where root pruning or lifting is necessary the work should be hastened forward. If the borders only need top dressing, remove a few inches of the surface soil and replace it with compost composed of good virgin loam, old mortar or lime rubble, wood ash, and a sprinkling of bone dust. This mixture will be rich enough to enable the trees to make short-jointed, medium sized shoots. The use of animal manure causes the trees to make rank growth that seldom fruits satisfactorily.

Planting Young Trees. It is advisable to plant a few surplus young trees either in late houses or on outside walls, for replacing old, exhausted specimens. If young trees are not purchased this season, send the order to the nurseryman at once. In selecting young Peach or Nectarine trees, choose those with a clean union between scion and stock, a well developed head of nine to twelve short-jointed shoots, and an abundance of fibrous roots. A trained or extra strong roots should be cut back to sound tissue. Prepare the positions the trees are to occupy in advance of planting, as the sooner they are planted after they arrive the better. The compost advised above is suitable for these trees, and it is not necessary to add bone meal, but the soil should be in a workable condition

THE ORCHID HOUSES.

By J. COLLIER, Gardener to SIR JEREMIAH COLMAN, Bart., Gatton Park, Reigate.

Cattleya and Laelia. Cattleya Bowringiana, C. labiata, and many of their hybrids, including C. Portia, C. Wendlandii, C. Clarkiae, C. Fabia, and C. Mantinii, together with many Brasso-cattleya hybrids, are in bloom. The flowers will remain in good condition for some weeks provided the roots are kept on the dry side, and the amount of atmospheric moisture reduced. Care must be taken that the flowering does not exhaust the energies of the plant, and the spikes should be cut directly the pseudo-bulbs show signs of undue shrivelling. After the plants have passed out of bloom the old spikes and spent leaf sheaths should be removed, severing them as closely as possible to the top of the pseudo-bulb. Moisture sometimes accumulates at the base of the flower sheaths and sets up decay of the leaves and new pseudo-bulbs, hence the need for this operation. The plants at that stage should be afforded a period of rest in the coolest and best ventilated part of the Cattleya house. Let the roots have only sufficient water to keep the pseudo-bulbs plump. Encourage the plants to develop new roots, but premature top growth should be prevented. Weakly specimens should have their flower-spikes removed as soon as they appear through the sheaths. The early flowering C. Gaskelliana, although rooting freely, should not be disturbed by repotting at this season, but this work should be done in the spring, when new growth commences. Plants of C. Trianae that have completed their growth should be carefully watered, affording them only sufficient moisture to keep the roots damp, but the supply may be slightly increased when the flower spikes are seen to be pushing from the base of the sheaths. C. Percivaliana has completed its pseudo-bulbs, and should be kept moderately dry at the roots and grown in a light position near to the roof-glass. C. Lawrenceana makes its growth during the winter months, and is, as a consequence, a difficult plant to cultivate successfully for a period of years. During the winter it should be grown in the warmest part of the Cattleya house, near the roof-glass. The compost should be allowed to become quite dry between each watering; the water should be poured around the outer edges of the soil. From now onwards during the winter discretion should be exercised in supplying water to the roots of all Cattleya and Laelias, for it is far better to keep the plants on the dry side than to allow the compost to become saturated. In collections where numbers of hybrid Cattleyas are cultivated the plants are in various stages of growth at any one time. It is a difficult matter during the winter to keep those that should be at rest from breaking into premature growth. In view of this fact it is advisable to place those that are resting at the coolest, and those that are growing or are commencing to flower spikes at the warmest end of the house.

PLANTS UNDER GLASS.

By E. HARRISS, Gardener to Lady WANTAGE, Lockinge Park, Berkshire.

Salvia Pitcheri. During November and December, when Chrysanthemums dominate in all houses, and in many others, Salvia Pitcheri offers a welcome change. Its velvety blue flowers contrast most effectively with yellow and bronze Chrysanthemums. The plant requires very little attention to make it flower in perfection. After flowering, the shoots should be cut down and the roots plunged in a bed of leaves in a cold frame for the winter. Cuttings should be inserted in the spring in 3-inch pots filled with a light, sandy compost. About 6 or 7 cuttings should be placed in each pot, and they will strike readily in cool frames provided they are kept close and shaded from bright sunshine. When the pots have filled the roots the plants should be potted into 7-inch pots, using a fairly rich compost. During the summer months a Pitcheri should be grown in each of the pots, and the pots plunged in a bed of leaves. The plants will flower outdoors, and in a sheltered position may remain there until October.

Salvia Heeri. The scarlet flowers of this Salvia are produced from the end of January until February. Cuttings should be grown in a light position in the house under conditions similar to those advised for S. Pitcheri. The plants develop a mass of roots, struggling for room in the pots. Feed with weak liquid manure and plants of water and stimulants are needed for the plants are in flower. Tie the growths neatly to their supports.

Salvia splendens. When plants of this species have passed out of flower partly cut them down and place them closely together in a cool house for the winter. The roots will receive very little water until growth becomes active in the spring. If red spider attacks the plants plunge the latter in the beddes and syringe them vigorously with an insecticide.

THE HARDY FRUIT GARDEN

By JAS. HUDSON, Head Gardener at Gunnersbury House, Acton, W.

Alpine Strawberries. Our latest batch of Alpine Strawberries was planted about three weeks ago. When opportunity affords the old beds will be thoroughly cleared of weeds and rubbish, and where late runners are too abundant these will be thinned. On a fine day the hoe will be freely used between the plants. It will also pay to hoe the rows of other Strawberries that have been recently planted. Late runners should be nipped out when working over the beds with the hoe, or possibly with the rake.

Well-Rooted Trees. I recently visited a well known fruit nursery and saw trees being lifted for despatch to customers. I was impressed with the sturdy, short jointed growth of the trees, which, I was informed by the owners, had all been lifted a year ago. Such trees, furnished with plump wood and fruit buds, promised well for moving, and are the best for purchase. Their cost may be a little higher than for trees with less promise for quick fruiting, but the extra expense is soon recouped by quick returns. It may be tempting to purchase trees that are offered cheaply, such as have been grown closely together and that have not been lifted so frequently for their well-being as they should have been. I advise all would-be planters to use discretion and inspect the trees in the nursery before they purchase.

Apple Rev. W. Wilks. This very prolific culinary Apple has been grown at Coinneysbury House Gardens for some years past, and during that period I have watched the trees from year to year with special interest. They are all dwarf trees on the Paradise stock, and being compact and dwarf in growth may be planted 3 to 4 feet apart in the rows, which should be 6 feet asunder; in fact, similar to rows of Raspberries. It is the best early culinary variety for small gardens, as it crops very freely, but it is easy to thin the crops on dwarf trees, and such surplus fruits are always useful for tarts or for jellies and other methods of preserving. The fruits that are left to fully mature will grow to a large size.

Pear Marguerite Marillat. This French Pear is a seedling of Pitmaston Duchess, and is a fine variety to plant in the Apple just alluded to. It forms a close, compact, semi-pyramidal tree. For small gardens, where every possible advantage has to be taken of the limited room, it is one of the best sorts to plant. When the fruits are partially grown they may be thinned and used for stewing. The tree is an almost invariable cropper, with a sturdy growth; do not, however, let it bear to excess, or the fruits will not be of first rate quality. This Pear is very fine growing into a large tree when worked on the Quince stock, hence it may be grown in the same conditions as Rev. W. Wilks Apple. The fruits can also be highly commended for purposes of bottling, being of a better colour than many Pears.

THE FLOWER GARDEN.

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

Bedding Plants. It is not safe to leave Iresine, Coleuses, Alternantheras, and similar plants in frames after this date. They winter well when not too early introduced from frames into a vinehouse kept just above a greenhouse temperature, very little water being required until quite fire heat is used early in spring to induce the growth for the provision of cuttings. A watch must be kept upon the less hardy Caladiums, or they may be caught by a severe frost. A warm, growing temperature is also unsuited to these plants, causing them to make spindly growth. Pelargoniums (Geraniums) in boxes winter quite well with little fire heat, and will even withstand a slight frost provided they are kept quite dry at the roots. As soon as Violas, Gazanias, Nepeta, Lavatera Olbia, and other cuttings in cold frames are seen to be rooted they should be given the maximum of air, but be protected from rain.

Shrubs and Shrubberies. The planting of shrubs should be completed forthwith. In my experience it is really too late, and the few that I had to plant this year were got in early in October, and no doubt are now forming a fresh root system. It is possible, in the case of rough shrubberies, whose purpose it is to hide unsightly objects or provide screens, to prune the shrubs roughly at this season, removing or shortening an encroaching shoot here and another there. Leaves may then be raked into heaps around the roots of the plants, and a little soil scattered over them to keep birds from scratching. Where shrubberies are dug the leaves may be applied now, and leaves and weeds buried in the process.

Lawns. If there be time to spare after sweeping and removing fallen tree leaves, all rough grass that may have escaped cutting should get a final trimming, and all edges to flower beds and borders be straightened; geometrical beds should be reduced to their proper form. This can be done when ordinary ground work is impossible by reason of unsuitable weather, and is a vast saving of labour in spring, when much other work is pressing. Now is also a suitable time to plant out Foxgloves and most kinds of bulbs on those portions of lawns and under trees where they will afford an added beauty to the grounds. Weeds on paths and carriage drives should be removed, giving each plant a gentle twist when pulling it up, in order not to disturb the gravel.

EDITORIAL NOTICE.

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

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

Special Notice to Correspondents. — *The Editors do not undertake to pay for any contributions or illustrations, or to return unasked communications or illustrations unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.*

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY, NOVEMBER 18—
National Chrys. Soc. Floral Com meet., Essex Hall, Essex Street, Strand. Fr. Com. at 35, Wellington Street, W.C., at 6 p.m.

TUESDAY, NOVEMBER 19—
Royal Hort. Soc. Comis. meet

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 42.2°

ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, *Wednesday*, November 13, 10 a.m.: Bar. 30.4; temp. 48°; Weather—Dull.

The Dawn of Peace.

The prospect of peace dawns on a world which has learned to laugh again. It is well that laughter—that antiseptic of the mind—should ring out, and that the old should remember how to smile, for the work which lies before the people of this country requires minds of quad poise, apt to concord and co-operation, and not warped by selfishness or by unmanageable sorrow. Not only as members of the community, but also by reason of their notable contribution to the common good, have horticulturists reason to rejoice. The members of the horticultural trades have made great sacrifices, have sustained uncomplainingly heavy losses, and have submitted with patriotic good grace to many restrictions on their avocations. They, as representatives of a key industry—for without seed there may be no harvest—have (and at times it has been no easy task) provided all the supplies which the country has needed of them. So has it been also with professional and amateur gardeners. When the young were taken, the older professional gardeners, resisting the golden siren call of munition work, continued not only to cultivate their gardens, but have given themselves unsparingly to the work of helping practically the army of volunteer cultivators who, thanks in no small measure to their existence, have made such notable contributions to the food supply. These efforts interpreted in terms of manpower have meant the transport of not fewer —and probably far more than 250,000 American soldiers landed on the soil of France at the critical moment of the war. Nurserymen and florists, too, have lent their powerful aid to food production, and as a recent computation shows, have, in spite of lack of labour, converted over 60 per cent. of their ground and glasshouses to the purpose of food production.

Now that thankfulness fills our hearts for deliverance from the greatest peril that has ever menaced civilisation, we shall do well to remember that our allies will need our help in re-establishing their lives and in rebuilding their horticultural industries. Therefore we can do no better by way of thank-offering than to contribute according to our several means to the fund established by the Royal Horticultural Society for the restocking of the gardens and orchards of France, Belgium and other allied nations. At home, too, it may be that the confraternity of gardeners will be called upon to give practical help in connection with memorial war gardens. For it has been pointed out with cogency that memorials should be wrought in the materials with which those who construct them are apt. And just as we are, as a nation, of only moderate competence in raising statues, we are unrivalled in raising plants: the war has shown that we are a nation of gardeners. Hence what more fitting form of war memorial than gardens in which the people "shall walk abroad and recreate themselves?"

R.H.S. War Horticultural Relief Fund.

The Lord Mayor, SIR HORACE MARSHALL, is presiding at a meeting at the Mansion House, on December 18, when an effort will be made to stimulate the Royal Horticultural Society's War Relief Fund, organised to restore the gardens and orchards of our French, Belgian, and Serbian Allies, which have been completely devastated by the enemy. An appeal is being made to all those who have gardens and orchards in this country to help to restore the gardens and orchards of our Allies. The hon. treasurer is SIR HARRY J. VEITCH, 17, Victoria Street, S.W. 1.

Shrewsbury Floral Fête to be Revived.

We learn from MR. W. G. BRAZIER, Secretary of the Shropshire Horticultural Society, that his society is making arrangements for a Floral Fete and Exhibition, to be held at Shrewsbury in August, 1919. We congratulate our Shrewsbury friends upon being the first to intimate their intention of continuing the work which war conditions alone prevented them from conducting during the past four years.

Horticultural Conditions at Bruges.—In a letter to Messrs. SANDER, St. Albans, Mr. T. MELLSTROM, their manager at Bruges, who remained at his post throughout the war, writes, under date of November 1: "The nursery is not destroyed, but a lot of glass is broken, and we are now busy repairing. In doing this we must take the glass from some empty houses and use it to repair the others. Most of the glass was broken on October 18. Fortunately the weather has been and still is wonderfully mild, but it will take another fortnight to get all the houses done. The Orchids are in a pretty fair state. The Odontoglossums, Cypripediums and Miltonias are best, the Cattleya seedlings not quite as good. There are good Odontoglossum and Cymbidium seedlings, and several houses of Cattleya seedlings. The house in front of the office contains Cymbidium Sanderi and Kentias, and besides that there are other houses with Kentias, also Aspidistras and Azaleas, and then the Bay trees. We have a certain amount of coal and coke, and if the coming winter is not too severe I shall manage to pull through till the spring. January to March, 1917, was the most severe winter I have ever known in Bruges. It was a terrible time, and put us to a severe test. We lost a good many Bays that winter, also all the large Phoenix. The Orchids also suffered that winter and did not get any heat in the following summer, so they could not mature their pseudo-bulbs, and when last winter came, which was also very cold, and the coal of the poorest quality, a great number of the Cattleya seedlings died."

Wart Disease in Potatos.—This disease has now been discovered in the United States. Professor J. G. SANDERS, Economic Zoologist of the Pennsylvania Department of Agriculture, reports it at Hazelton, Pa., and states that it had apparently gained access there previous to the quarantine established by the Federal Horticultural Board on September 20, 1912, prohibiting the further importation of Potatos into the United States. The U.S.A. authorities are taking every precaution to watch and fight the disease, which is a serious menace to the Potato growing industry.

Sugar from Stevia Rebaudiana. In the issue for October 5, p. 140, we published a short note on this subject. We now give a few more particulars. It is claimed for Stevia Rebaudiana that it is the sweetest plant known. Dr. M. S. BERTONI originally described it in the *Boletino de la Escuela de Agricultura de la Asuncion del Paraguay*, ii., 1899, p. 35, under the name of Eupatorium Rebaudianum, with the native names, Caá-èhè and Azucá-caá. He subsequently sent specimens of the plant to Kew for verification, with some information, which is recorded in the *Kew Bulletin*, 1901, p. 175. Further material was received later, and the species was again described by Dr. HEMSLEY and figured by Miss M. SMITH in HOOKER'S *Icones Plantarum*, plate 2816, December, 1906, as Stevia Rebaudiana. Stevia differs technically from Eupatorium in having 5-flowered heads and a chaffy, awned pappus. Dr. BERTONI accepted the correction and adopted it as his own.

The West Indies.—No. 1 of the seventeenth volume of the *Journal of the Imperial Agricultural Department for the West Indies* is devoted almost entirely to the elucidation of the insect and fungus diseases of the Cotton plant in that region. The feeding, breeding, and trapping of certain bugs causing internal diseases are discussed, and remedies suggested. In the same number there are "Some Observations in Fish Poisoning in the British Virgin Islands." Throughout the West Indies fish forms an important article of diet of the inhabitants, and the poorer natives regard it as their staple food. It is recorded that about 100 kinds are commonly caught and used for food. While several kinds of fish are undoubtedly poisonous, others only prove so when not fresh or from ptomaine formation after capture. There is also an article giving the results of experiments on the thymol content of Monarda punctata (Horse-mint) and Carum copticum (Ajowan), cultivated in Montserrat.

Birds and Grain.—The usual dressings used to protect seed corn from birds are made from tar. The different kinds of tar vary in usefulness, and the Food Production Department recently had tests of different tar dressings made at Rothamsted. No dressing tested gives absolute protection; most of them injure the seed unless carefully used, but when Wheat is sown late in the autumn, or grain is sown early in spring, rooks and other birds may cause so much damage that seed should be dressed. The best form of tar that has been tested is acetone tar. This is only supplied by the Ministry of Munitions (Propellants Branch, 32, Old Queen Street, London, S.W. 1), and in quantities of not less than one barrel (40 gallons). It is produced in Essex, and in the Forest of Dean, Gloucestershire, and the current price is about 80s. per barrel at the works. To secure this product growers who do not require a 40-gallon cask should combine and secure delivery of a barrel through a dealer. The method of treatment is to sprinkle 1 pint of tar on 4 bushels of grain, and to turn the seed over and over until the tar

uniformly distributed. If spread out the seed should dry in a day. If the tar is too thick for handling (as it is in very cold weather) it should be warmed before use. This may be done by standing the vessel containing the tar in hot water. Ordinary coal tar is often used for dressing seed, but it is rather variable in nature. It is not so protective nor so safe to use as wood tar. It, however, the coal tar usually met with is used as follows, the risk of injury to seed is slight. One pint thinned down with one quarter to one-third its volume with paraffin and stirred well may be applied to six bushels of grain in the same way as acetone tar. Great care must be taken to obtain an even distribution of the tar, otherwise it will have a harmful effect on the germination of the grain.

A New Violet. The beautiful new Violet illustrated in fig. 79, named Mrs. David Lloyd George, received the R.H.S. Award of Merit on the 8th ult., when exhibited by the raiser, Mr. J. J. Kettle. The petals are deep violet-purple with a few darker markings at their bases. In the centre are four white petaloid stamens, forming a light-coloured eye, and a few violet lines appear on each of them. The segments of the blooms are overlapped, and are regular, together with the compact and sturdy stems, makes the variety a decided acquisition to the finest of recent new Violets.

Stephanandra Tanakae. [illegible] seeds of this Japanese shrub have [illegible] and on the market, and the well-[illegible] its popular name of Japanese Nut. The Stephanandras have no claim [illegible] the edible nuts, but "Japanese Nut" is a good [illegible] name, so we decide [illegible] *Stephanandra tanakae* to the flora of our gardens and notably those in our gardens. The species S. flexuosa and S. [illegible] are [illegible] arguments and claims both [illegible] and graceful shrubs, [illegible] branches. The [illegible] splendid collection of cut [illegible] exhibited by Messrs. J. Cheal and Son, at the meeting of the Royal Horticultural Society, October 22 last. Although Stephanandras [illegible] shrubby Spiraeas or [illegible] Stephanandra flexuosa, the [illegible] are referred as flowering shrubs. They blossom freely, but the individual flowers are dull whitish. The chief garden value of both species lies in the graceful pose of the branches and the warm, brownish golden winter colour of the twigs, which is best seen after the leaves have fallen. Although these shrubs cannot be classed with Vaccinium pallidum, for instance, which develops glorious autumn colouring, yet the leaves of the Stephanandras are very attractive before they fall, and brighten considerably the front of the shrubbery at this season. Wherever the shrubby Spiraeas thrive, Stephanandras may confidently be planted.

War Item. We regret to learn of the death of 2nd Lieut. Jack Hardy, the younger son of the late Mr. George Hardy, of Pickering Lodge, Timperley, and Mrs. Hardy, late of 45, Fitzjohn Avenue, N.W. Death occurred on October 21 from pneumonia. The late Mr. George Hardy was well known as an Orchid lover and grower, and Cattleya Hardyana first appeared in his collection.

Publications Received. *Journal of the International Garden Club*, September, 1918, New York. (Waverley Press, Baltimore.) Price one dollar.—*Forty-first Report of the Connecticut Agricultural Experimental Station*, New Haven, U.S.A. (Published by the State.) *Plant Genetics.* By John M. Coulter and Merle C. Coulter. (Chicago: The University of Chicago Press.) Price $1.50.

BUD VARIATION IN POTATOS.*

(*Concluded from p.* 190.)

So far I have dealt with facts which are familiar to all. But the question will, perhaps, be asked: "Granted that no new and distinct Potato—or variety—has hitherto arisen by bud variation, why should that fact rule out the possibility of Nature asserting her independence, and any day, in any garden or field, giving rise (i.e., giving birth) to an absolutely new Potato by bud variation?"

There are two answers that naturally occur to one, namely:

1. That as the processes of Nature are but imperfectly known to us we cannot limit the possibilities of what Nature herself may see fit to accomplish; but, on the contrary, as Nature allows us opportunities of studying her operations, and we are thus able to form some accurate idea of those natural laws which seem to be her guide, we are justified in concluding, not only that what has been will be, but also that what has *not* been is not likely to occur.

2. That the study of the life-history of the Potato affords abundant reason for believing that the possibilities for any such unprecedented and spasmodic action on the part of Nature is inherently improbable.

I need not dwell upon the first answer, but the second deserves attention, for therein lies our strongest ground for disputing any claims that have been made for the origin of any new and distinct Potato by bud-variation, and for demanding duly attested evidence of the data upon which the claims are made.

In the first place, it is significant that the so-called new and distinct varieties are said to have had their birth during the very brief period—say two to three weeks—when the tubers which gave rise to them were buried in the ground, and observation on our part was impossible.

Why should a new and distinct variety arise just at this particular moment? We all know that if any departure from the original form were to take place, it must probably be when Nature would be putting forth her greatest effort; but during the few weeks below ground the tuber may be said to be gradually awaking from its dormant condition. From the moment, however, the foliage appears above ground, all the energies of plant life are stimulated into activity by aerial growth, and it is during the four or five months of summer and autumn growth that we should naturally look if at any time for the gradual signs of bud variation which might give rise, if at all, to a new and distinct variety. But has anyone ever seen an instance of this?

Then, again, we must bear in mind that if bud variation were so at work, it would affect not the whole but only a portion of the plant, perhaps one stem, or more probably one lateral shoot from one of the stems of the plant, just as we may often see a side shoot of a variegated

Fig. 79.—Violet Mrs. David Lloyd George.

* "Do Potatos Give Rise to New and Distinct Varieties by Bud Variation." Paper read by Mr. Arthur W. Sutton, J.P., at the Ormskirk Potato Conference, October 31, 1918.

Holly-bush more or less coloured than the other shoots, or similarly in the case of Chrysanthemums or Roses, when a colour-sport has occurred.

But those who claim that new and distinct varieties have arisen by bud-variation assert that, from the earliest stages of growth above ground, the so-called new varieties are wholly and completely distinct from their neighbours in the plot.

It is important to remember that if Nature was actually developing a new and distinct Potato by bud variation, in the manner which I have indicated as the only one at all conceivable, namely, by bud-variation at or from a single bud on some portion of that plant, we could not possibly expect to find all the tubers produced at the base of that plant had been affected by this process—the probability would be that not more than one or possibly two tubers would differ from the original form. The fact, however, that we have been advised not to remove plants which we call "rogues" from a crop of Potatos, because they may be new and distinct varieties which have arisen by bud variation, immediately gives the lie to the whole claim, as in every instance where it is said a new variety has so arisen the whole of the tubers at the base of the plant, when lifted, differ entirely from the rest of the tubers in the plot, and, moreover, are all like one another.

It has been said that Darwin, in *Animals and Plants under Domestication*, Vol. 1, ch. 2, p. 410, stated that new and distinct varieties did arise by bud variation, but the only instance that can be found in his writings, or in quotations from them, refer most distinctly to changes in colour such as I have already alluded to. Darwin does say that one such Potato which had varied in colour produced a heavier crop than the original form, yet this does not substantiate the claim made, for the tubers which varied in colour might the next year, when the heavier crop was noticed, have had more favourable treatment than the others grown alongside.

But we must go back a step further to find the source of true variation, i.e., variation that would give rise to a fresh individual, or a new and distinct variety. Nature is one in all essential points, and the only source from which any new form can arise or does arise, is to be found in that process of Nature which commences with the fertilisation of the female organ and, followed by the embryonic stage, gives rise to a new birth. By this means, and this means alone, do we find that the innumerable forms around us have arisen, whether in the plant or animal world. I am perfectly safe in saying that in precisely the same manner as we all recognise that no two human beings are the same, and no two varieties of Potatos, however much they resemble one another, are the same, so we have no record of a single instance where any individual, whether plant or animal, has ever lost its identity, nor has its identity been merged into that of another distinct individual during the brief course of its existence.

Another interesting line of study is the comparison of the pollen grains of the wild types of Solanum and the pollen grains of the cultivated Potato. In every wild type of Solanum so far examined the pollen grains are of one uniform type, i.e., elliptical in shape. All the seedlings of these wild Solanums are as absolutely like the parent plant as are Potatos which are propagated by planting sets or seed Potatos. On the contrary, the pollen grains of any and every cultivated Potato are totally different and are irregular in form, and, as we all know, no cultivated Potato has ever given seedlings which exactly reproduce the parental form, even though they may to some degree present a family likeness, and yet the seedlings invariably retain their individuality when propagated by sets.

It may be objected that I am attempting to prove too much, because there have been Potatos put on the market which were stated to have been seedlings from a well-known Potato, and yet when planted side by side with the supposed parent they proved to be indistinguishable from it. The answer, however, must be that more evidence of the actual origin of the so-called seedling is necessary before we can accept the claim made. It is even possible that inasmuch as Potato tubers which are planted for any crop are generally called "seed" Potatos, this term "seed" Potato might by some dealers be considered as a sufficient excuse for describing as seedlings any plants raised from such "seed."

If it is asked: Why, then, is it ever supposed that plants which differ from others in a crop of Potatos have arisen by bud-variation? The answer is that it is not sufficiently realised how difficult it is to obtain any large quantity of seed tubers absolutely true to name, and amateurs, planting the seed they have bought, too often imperfectly, "rogued" during growth, and sold without sufficient expert hand-picking of the tubers, are surprised to find stray plants differing entirely from the general crop, and the inference they draw is that distinct varieties have arisen by bud-variation. The introduction of stray tubers of Potatos in the manure applied to the land is also a frequent source of "rogues" which may appear in crops.

This inference is, perhaps, in some cases encouraged by the misleading term of "seed" Potatos, for it might be argued that if new varieties occur amongst other plants grown from seed why not amongst crops of Potatos grown from so-called "seed" Potatos? The answer, of course, is that the term "seed" Potatos is a misnomer, and it is not sufficiently understood that Potato tubers are but portions of the underground stems of the plant of the previous season's growth, and that when these are planted they can but reproduce the plant of the preceding season, of which they remain an integral portion.

I ought not to conclude my paper without referring to one or two of the most noteworthy instances in which it has been claimed that mutations by bud variation have arisen, the claims being supported with a mass of what appeared to be more or less trustworthy evidence. The most notable in recent times was that of the so-called Solanum Commersonii Violet, which a French barrister named Labergerie asserted had arisen from the tubers he had planted of the wild Solanum Commersonii, the tubers of the latter being about the size of a pigeon's egg or smaller, and of a dull brownish purple, and those of the supposed "sport" a dull red colour, often 3 to 5 inches in length, and of an extremely rough and coarse type.

I visited Monsieur Labergerie at his home in the centre of France, and I have never met a man more evidently sincere and honest, nor one who had kept more complete and accurate records of every detail of the work carried out. So much was this the case that at first I felt it almost impossible to doubt the correctness of the conclusion to which he had come, but it was staggering to compare the wild type, with its tiny tubers, and slender foliage growing only from 8 to 16 inches high, with the abnormally coarse and rough tubers of the so-called mutation or "sport" the haulm of which often grew at least 4 feet high. So great a value did Monsieur Labergerie place upon his crop that the entire field of about 10 acres was surrounded by a high fence, and guarded by alarm guns, so set that any thief attempting to enter the enclosure would set them off and thus give warning.

As most of us may remember, the late Philippe de Vilmorin, of Paris, in conjunction with myself, proved conclusively that this so-called mutation was nothing more or less than the well-known Blue Giant Potato introduced by Paulson, of Germany.

So much attention was attracted by the claims made by Monsieur Labergerie that Dr. Pethybridge, on behalf of the Irish Department of Agriculture, instituted an exhaustive series of trials in every part of Ireland, and summed up his report as follows:—

"Slight variations and differences have, it is true, been observed, but as a result of all the observations made it cannot be said that any constant series of differences between these two plants have been established. The difference observed are not specific or even varietal, and are all more than sufficiently accounted for when considered in connection with the widely distant sources from which the original 'seeds' were obtained. They arise chiefly from differences in vigour of the stocks, and are not greater than often arise in plots of any single variety the 'seed' of which has been obtained from such widely scattered centres. While not prepared to state, therefore, that the two varieties are identical, we cannot show any sufficient reasons why they should be regarded as distinct."

The closing words may not convey to us in England quite the clear and definite meaning they might to Irishmen, but if such a series of trials could not show any sufficient reason why the two should be regarded as distinct, we may perhaps accept this as equivalent to saying they must be identical.

The only other case I will mention is that in which the late Professor Heckel, of Marseilles, stated that Solanum Commersonii had given rise by bud mutation to other distinct forms too numerous to mention in detail. I visited the Professor's grounds at Marseilles, but was far less impressed by what I saw there than when visiting Labergerie. Some of the so-called mutations were easily recognised as well-known Potatos of commerce, and the Professor's claim that a liberal use of pigeon's dung had facilitated Nature's efforts to produce the "sports" did little to remove one's scepticism.

But it is not merely that we are without authentic instances of any new and distinct varieties due to bud variation in the ordinary course of Nature. We have records of various attempts to assist Nature, but all without success. We have tried at Reading the following experiments:—

1. We noticed that the shoot from one of the "eyes" of a Potato differed slightly in colour on one side as compared with the other. A shoot was allowed to grow to a length of about 2 or 3 inches, and then removed and planted in case by any possibility the variation in colour of the shoot might indicate some variation in the produce. But this was not the case, and the colourisation, we therefore concluded, was due to the effect of light on one side of the shoot.

2. All the eyes were removed from the tuber, two eyes from another variety were inserted, the tuber was carefully bound up and planted in case by any chance the produce might show some mingling of the two varieties. In the result, however, the Potatos produced were absolutely true to the variety from which the foreign eyes were taken.

ON INCREASED FOOD PRODUCTION.

AUTUMN SOWING OF BROAD BEANS.

Does it pay to sow Broad Beans in November? This is a question which is asked frequently by northern gardeners, and I propose to answer it in this note. The practice is frequently advised by writers living in the South of England, and no doubt, in districts where the winter is genial, Broad Beans may be obtained much earlier by sowing them in the autumn than in the spring. I consider, however, that this advice to sow Broad Beans in the autumn is quite inapplicable in the north, since if such sowings are made, the plants rarely stand the winter, and even if they do, they are much weakened by the ordeal through which they have passed, and give a very poor return.

I favour no sowings of any kind in the autumn and winter, with the exception of a little Spinach

Broad Beans, which can be got in during September or October if possible. I consider, especially in the north where the weather is so very uncertain, that it is advisable to get the ground as clean as possible so as to facilitate trenching or deep digging on all suitable days. The northern gardener has a strong soil to contend with in many cases, and he also has limited time to do the work of digging and trenching, especially as the reduced staffs and the prospect of bad weather and the troubles in labours to need quite as much food, if not more, than those his southern brother works for in genial counties, such as Cornwall, Devon, Dorset and Kent. It is essential if he is to cultivate the land under his control thoroughly, to begin early at least two sections quite clear, in order to permit of his getting out a trench at one end and working counterpartly to the other. This will not be possible if there is much ground occupied with autumn sowings of the kind just mentioned. The reason that autumn sowing is advised is to get Broad Beans early and thus to avoid attacks of the Bean Fly. However, since such treatment has been proved not to pay in the North of England and Scotland, it should be tried very rarely.

Regarding the Bean Aphis, this can easily be kept in check by spraying with a suitable insecticide as the summer approaches, for spring before the fly has badly attacked the plant. Such precaution will repay the gardener better than adopting such a doubtful policy as sowing autumn seed in wet ground in November.

On land very foul with pests a dressing of gas lime at the rate of one pound to the square yard may be given with great advantage, but if this material is not applied at once it may stale and spoil the land for the next crop. A safer preparation is a mixture of naphthaline cake and lime at the rate of one part naphthaline to fifteen parts of lime, and this material may be dug into the ground with perfect safety a week or two before the crops are put in.—*J. F. Hy. Westwood, Eccleshill, Sheffield.*

CITY OF EDINBURGH FOOD PRODUCTION SHOW.

A CORRESPONDENT sends us the following report from *The Scotsman*, and remarks that the show held on the 22nd ult. was a most valuable contribution to the food production propaganda and created great interest in the city. The fine, if not immune varieties of Potatoes was a source of attraction. Plants for exhibits were submitted, set up in baskets and those were parts of the better known sorts, with, at the end of the table, examples of tubers affected with Wart Disease. The Board of Agriculture for Scotland has recently scheduled some desirable areas in Scotland in which only immune varieties are to be planted, and this note has added considerably to the interest. Over fifty varieties of non-immune Potatoes were staged in three dishes of Peas; fifteen dishes of Potatoes; nine varieties of Onions, and two of the standard kinds of vegetables were represented in several dishes of different varieties. The whole was a most interesting exhibit. The Corporation Allotment Holders Association made a good and a fair demonstration of what an allotment holder might expect to produce. The exhibits were all well staged.

Potato and vegetable culture as a subject that appeals nowadays to thousands of people who in the far away pre-war days were content to have these commodities served out to them daily by or through their greengrocer. Edinburgh has not lagged behind in this important matter, and the Public Parks Department of the city are as anxious as ever to instruct the public how to cultivate their allotments and gardens for food purposes. With that object in view there was opened last night in the Synod Hall a food production exhibition. The exhibition, which will be open to-day and to-morrow, is purely educative in its character. It is free to the public, and all the good things that are spread on the tables have been grown on public ground—at Saughton, Portobello, and Inverleith, under the supervision of Mr M'Hattie. Practically all sorts of Potatoes and other vegetables are displayed in a most artistic and attractive form. There are two tables of Potatoes, one immune from disease and the other not immune, and with a view perhaps of impressing on Potato growers the risk of planting varieties belonging to the latter class a few Potatoes are shown in all their loathsomeness with the ravages of Wart Disease displayed upon them. An examination of the Potato exhibits and provide useful hints, for one of each different variety is shown, as the result of tests and experiments, to demonstrate the quality of the Potato what sort of cropper it is, and its liability to disease. The other vegetables make a fine display. The tickets attached to the exhibits show, when planted out, and the season it was. Councillor Mackenzie, the Convener of the Parks Committee, presided at the opening ceremony, and Lord Provost Sir J. Lorne Macdonald, in formally declaring the exhibition open, said he hoped that allotments (they had not started in a war necessity) would become a permanent feature in the city of the city. What would be done after the war in providing the parties that had been put under cultivation would be for the citizens to say, but for himself he thought the cultivation of the land was the finest form of recreation they could have alike as regards its productive, educative, and moral values."

POTATO YIELDS.

WHAT [illegible] *Rep.* 1653 kindly give details as to how the 5lbs. lbs. of Potatos were grown [illegible] as to the soil they were given out to the [illegible] conditions as to planting, and with [illegible] the kind of soil, the amount of manure, and the space of ground that was used. There is [illegible] to [illegible] and [illegible] [illegible] as the records.—*J. P.*

HOME CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed by our readers.

Planting by Caterpillars [illegible] I [illegible] interested in the feats of worms in drawing [illegible] into their holes as described by Miss S. Carson. The instinct of worms in drawing leaves into their burrows by the stalks is remarkable, because they thus cover the leaves rather than fix the line of least resistance. I have just had the fortune, or misfortune, to observe a similar instance in the case of the caterpillars of the Common Dart Moth (*Agrotis segetum*) and the Heart and Dart Moth (*Agrotis exclamationis*). During September the latter was in a plague [illegible] the former. The latter, known as surface caterpillars, bury their bodies in the soil by day, and come out at night to feed on the most diverse vegetables. They cut the stems of young Cabbages at the ground line, and, detaching the leaves, drag them into the soil by the stalk. The effect is that all the leaves of Parsley plants and those torn into the soil, gradually consuming them under cover. The finely curled blades appeared planted all around the leafless crowns, and by this means I knew where to dig out the caterpillars by day. I had to replant one third of the Cabbages.—*J. F.*

A Prolific Antirrhinum. Last year I received from Messrs. Arthur Turner, Ltd., Penzance, a few tall, yellow variety, with Carmine Queen as intermediate form. I saved the pods. The seeds were sown in February and the plants put out in a bed in my garden some time in April. They grew exceedingly well. They were all tall, the shortest 4 feet to the top of the central flowering spike. The form of the flower in all was near that of Carmine Queen, and not the least like the handsome form of Yellow King. The colour of all the flowers on all the plants was magenta-carmine, with a yellow lip. I am looking forward to next year's progeny with great interest. This autumn I saved a few pods of seed, and it occurred to me to count the pods produced on one plant. The number was 519, and the seeds contained in one pod I counted numbered 410, which gives the enormous total of 150,790 seeds reproduced from one seed sown in February. I have seen figures given for other plants, but never remember seeing any for the Snapdragon.—*W. Cuthbertson, Duddingston.*

Richardia Elliottiana and Pentlandii (see p. 171). In the note accompanying the illustration of four species of Richardia, in the *Gardeners' Chronicle* for October 26, mention is made of the distinguishing features of the two above named. It is stated that R. Elliottiana has spotted leaves and wholly yellow spathes, while in R. Pentlandii the leaves are not spotted and the spathes are dark purple at the base. This is quite correct so far as most individuals are concerned. Some years ago, however, I had the handling of a consignment of tubers sent from South Africa as Richardia Pentlandii. While most of them had the thick textured, dark green leaves characteristic of Pentlandii, a few were spotted exactly as in R. Elliottiana. The flowers of all these spotted forms were purple at the base of the interior; in fact, these individuals were in every way Pentlandii except the spots on the leaves. Circumstances over which I had no control led to these Richardias passing out of my charge, so I do not know what became of them afterwards. So far as my experience of the two species extends, R. Elliottiana is a more vigorous grower than R. Pentlandii. When now they were both commonly referred to as golden-flowered Arum Lilies, and being treated as R. atrocana failures were frequent.—*W. T.*

Tulip Paul Diack. I am not able at this moment to consult any lists of eighteenth century Tulips, but the name of Paul Diack seems familiar to me. For many years I have had on my shelves a copy of the poetical works of the Rev. Edward Young, best known from his once popular "Complaint; or, Night Thoughts." In recently turning over the volume, my attention was arrested by a long passage in the second of the series of satires "Love of Fame, the Universal Passion" (first published in 1725), dealing poetically with the Tulip Paul Diack. Dr. Young considerately furnished, at all events to the later issues of the poem, a very necessary Key, in which we are informed that "Paul Diack, who gave name to a Tulip, was an honest, topping old Citizen of London, and a great Stock jobber." I have found no trace of him in the literature of the eighteenth century. The name, or style of the fact that Paul Diack was a London citizen, seems to be of Dutch or Flemish origin, possibly a corruption of Dyck. Perhaps Mr. Krelage of Haarlem, has some record of the Tulip which commemorates this "honest, toping old citizen of London."—*W. Roberts, 18, King's Avenue, Clapham Park, S.W.*

Apples for Grass Orchards. I can assure Mr. Holmes-Smith that I did not make my selection of Apples for orchards without considerable thought and as the result of experience of only from my own knowledge but observation of other people's practices. I can point to some of the finest trees of Dumelow's Seedling Wellington growing in a grass orchard and on the stiffest of clay soils. Not only do the trees yield large crops, but the growth is all that could be desired. On gravel soil I know of much older trees that are model specimens. What other Apple is there that commands the same price as Dumelow's Seedling late in the season? Much depends on the preparation of the ground and the after attention given the trees. I much prefer Peasgood's Seedling as a standard to Newton Wonder, especially if there is a prospect of moderate after attention in pruning. The former is naturally adapted to orchard cultivation by its compact habit of growth, while Newton Wonder is much more erect in habit, and as I wished to keep down the list of varieties, especially for farmers, I did not include both Newton Wonder and Bramley's Seedling. With regard to Worcester Pearmain, I grant this is not so vigorous in growth as some other varieties, but more money can be made from this Apple than any other dessert variety in cultivation, even with its medium growth. This I considered was a good reason for its inclusion.—*E. Molyneux.*

CROPS AND STOCK ON THE HOME FARM.

SOWING WHEAT.

No time should be lost in pushing on with the sowing of Wheat on any farm where the soil is in suitable condition. No advantage is gained by "muddling" in the seed when the soil is wet, because sufficient harrowing cannot be done to thoroughly bury the grain. In right soil success partly depends upon the ground being made firm as a preventive of wireworm attacks and the upheaval of the plants by frost. Again, in spring, when harrowing and rolling is done to make the soil firm and give a stimulus to the growth, if the soil is loose there is a risk of the harrows pulling up very many Wheat plants, or the roller may bury too many of the blades, and thus smother the growth and reduce the crop.

In the Southern Counties I find Wheat germinating well. Under the tests necessary by law, Wheat seed for sowing must have a minimum germinating power of 90 per cent. The dry August enabled the ricks to be built in good condition, and where thatching was promptly done the corn is coming out in splendid condition, but there are many "pinched" corns, as the result of drought at the end of June and during the early part of July, at a time when the corns should have been filling out.

Many of these "pinched" corns will come out when the bulk is screened, which should always be done, although some growers, I am sorry to say, sow direct from the threshing machine on their own farms. Threshing machines as a rule make excellent work, but they cannot be expected to take out all seeds of weeds- Docks, for example—therefore it is an advantage to winnow or screen the corn before sowing.

Some of the newer varieties of Wheat are not immune from these "pinched" corns, showing that adverse weather has an effect on even the newest sorts. These defective corns reduce the yield in bulk and weight per bushel.

Where the Wheat land was well prepared and the cultivation in all respects first rate, many good yields have been recorded. I had twelve sacks—48 bushels—per acre from one good sized plot of the Red Standard variety. I know this is not an extra good crop, but it is useful for seed, especially as the quality is good. This crop followed summer fallow and Mustard (sown early in August), ploughed in when about 2 feet high; a preparation I think excellent, because the summer fallowing provides such a good opportunity for freeing the land of Couch and other troublesome weeds, which, I regret to see, are on the increase.

Farmers can easily test their own seed Wheat. It is a quite simple matter, where there is a glasshouse. From a sample of seed, as screened, count off one hundred corns, taking them as they come and including the small as well as the large, so that the test shall be characteristic of the bulk. Soak the selected seeds in water for thirty six hours, spread them on a piece of flannel, on a plate, cover with more flannel, which should be kept moist, and keep the plate in a warm room or greenhouse. Germination should take place within from six or ten days, according to the warmth of the room. Forcing should not be attempted, as in moderately warm conditions there will be a natural germination. Count those that germinate, and thus discover the percentage of germination.

Where there is any doubt about the result of the future Wheat crop in any field owing to the lack of manure or suitable cultivation before sowing, it will assist the crop if a dressing of basic slag is given at the rate of 6 cwt. per acre. This is one of the best of manures for Wheat, and it has a good effect on the succeeding crop, especially should grass or Clover be sown with the Wheat for a future Hay crop. There are also the concentrated manures prepared by various experienced firms, which are excellent. *E. Molyneux, Swanmore Farm, Bishop's Waltham.*

TRADE NOTES.

CHAMBER OF HORTICULTURE.

IN point of numbers the meeting of Presidents and Secretaries of societies called to consider the aims and rules of the proposed Chamber of Horticulture, and held at Donnington House, Norfolk Street, Strand, on Tuesday, November 12, was not particularly encouraging, but from the point of view of business done it was a very successful gathering. Mr. Geo. Monro presided, and there were also present Messrs. R. Wynne (Secretary), H. Morgan Veitch, Joseph Rochford, W. Poupart, W. J. Lobjoit, Alfred Watkins, R. W. Wallace, A. Dawkins, C. Page, W. H. Page, G. H. Barr, Alex. J. Monro, Duncombe Gibbs, F. R. Ridley, C. H. Curtis, J. S. Brunton, E. F. Lawes, W. P. Seabrook, Bradnum, Lister, T. Want, H. R. Darlington, and others.

After the preliminary statement by the chairman the meeting was thrown open to general discussion, but beyond a general agreement to eliminate jealousy, suspicion, and consequent friction between societies, and a desire to secure the utmost advantage from the centralisation of force which the Chamber would offer, the discussion turned upon two points, i.e. (1) Whether local societies already in affiliation with a special trade federation should be allowed to attach themselves to the Chamber direct, or through their federation only; and (2) whether non-trading societies, such as the R.H.S. and the national and local floricultural and horticultural societies, should be admitted to association with the Chamber. These matters were discussed at considerable length, and it was finally agreed that societies belonging to a federation should be allowed to attach themselves to the Chamber direct, but it was pointed out that comparatively few of such societies would do so because of the financial responsibility they would thus incur, and societies financially strong enough to join the Chamber might prove a source of strength and inspiration to their federation. It was felt that to prevent societies belonging to a federation from joining the Chamber direct would probably mean that many would secede from their federation.

It was also agreed that to make the Chamber a horticultural one in the widest sense, non-trading societies should be admitted under special conditions to be presently arranged, and in such a way as to safeguard the interests of traders; these non-trading societies to have their own special committee.

Mr. Monro said the original aim in regard to finance was an income of £1,000 a year; this had been assured for five years to come, and the promoters were now aiming at £10,000 a year income, ten thousand pounds' worth of good work on behalf of horticulture, and a central building with offices, library, and meeting rooms. The date and place of the mass meeting will be published in due course.

LAW NOTE.

CLAIM FOR COMMISSION.

MR. JUSTICE SARGANT, in the Chancery Division, was occupied over three days in hearing an action in which the plaintiff—Mr. William Dent, of "Bankside" Cowbit Road, Spalding—sought to claim against the defendant—Mr George Monro, junr., of 4, Lavistock Street, Covent Garden, with whom was afterwards joined Mr. R. S. Cobley, his partner—a declaration that the plaintiff was a partner with the defendant in the business of a bulb farm at Spalding, or in the alternative, that he was entitled to an unpaid balance of commission amounting to about £2,300.

The defendants denied partnership and paid £500 into Court in full satisfaction of the claim for unpaid commission. The claim was made under an agreement for five years, commencing January 1, 1911, under which the plaintiff was entitled, as remuneration, to a fixed commission calculated on the annual net profits of the farm, of which he was defendants' manager.

The plaintiff claimed that upon termination of his agreement the bulbs in stock and plant generally, should, for the purposes of calculating his commission, be valued for the last year at selling prices. The defendants contended that the correct and proper method of valuing these stocks was the usual commercial basis of cost or market, whichever was lower.

Mr Justice Sargant dismissed the action on both counts, with costs against the plaintiff.

Obituary.

Wencelas Cyril Vejvoda.—Mr. W. C. Vejvoda, a Czech gardener employed in the Royal Gardens, Kew, died of influenza after three days' illness, and was buried in Richmond Cemetery on Friday, the 8th inst. Before he entered Kew early this year, Vejvoda had been employed in the nurseries of Messrs. Cibrans, Altrincham, for nearly five years, where he had rendered satisfactory service, and made many friends. At Kew he proved a first-class man. He was clever, industrious, keen after knowledge of plants, a most finished workman in every sense, and although, when he first came, he had to bear that prejudice against the "enemy alien" which has been in the air lately, he quickly lived that down, and by his kindly nature and manliness endeared himself to all who had dealings with him. He had been promoted to the rank of subforeman only a few weeks before he died. W. H.

ANSWERS TO CORRESPONDENTS.

DRYING GRAPES: *P. Y. C.* You will find the necessary details in *Vegetable Bottling and Fruit Preserving*, by Mr. and Mrs. Banks, published by the Royal Horticultural Society.

IRIS LEAF BLOTCH DISEASE: *L. G. P.* Iris Leaf Blotch Disease, caused by the fungus Heterosporium gracile, is widely distributed, and is most serious in plants grown in soils which are lacking in lime. The disease is noticed particularly in late summer and early autumn when the foliage is covered with irregular, yellowish brown blotches, and it is not unusual to find the surfaces of the leaves almost wholly occupied by these diseased areas. Unlike the bacterial rot disease of Iris, the rhizomes are rarely killed, but the plant becomes generally weakened and dies. If one of the diseased areas is examined with a pocket lens a number of black dots will be seen; these consist, for the main part, of masses of spores. These spores (conidia) are attached very loosely, and are readily dispersed by the wind, thereby affecting other Iris plants in the vicinity. Other spores find their way to the ground, and as it has been found that the spores can retain their vitality until spring, the new growths from the lateral buds on the rhizome are open to infection from the soil. It is useless to employ a spray fluid to check this disease, as it is impossible to wet the leaves sufficiently owing to their waxy nature. The following method has been found to be efficacious in eradicating the disease. All the diseased foliage should be removed in late autumn and burned. The ground should then be dressed with slaked lime at the rate of about two tons to the acre. It is not necessary to lift the plants in order to treat the soil. The lime should be forked into the soil directly after application, and it will be found that not only will growth develop clean and healthy in the spring, but it will remain so throughout the season.

MUSSEL PLUM: *D. P.* This is the old Mussel Plum, now seldom seen in gardens, but still used as a stock. It is doubtful whether it is possible to purchase a tree of any size.

NAMES OF PLANTS: *C. A. W., Bucks.* 1, Choisya ternata; 2, Kerria japonica var. variegata; 3, Picea pungens var glauca; 4, Alyssum sp.; 5, Polygonum sachalinense.—*W. M. M. D.* 1, Cattleya labiata; 2, Maxillaria picta; 3, Selenipedium Dominianum, a hybrid between S. caudatum and S. caricinum (Pearcei); 4, Selenipedium longifolium, varieties of which are also to be found in gardens under such names as Hartwegii, Hincksianum, and Boezlii. *J. W. P.* 1, Cheiroden fragrans, H. pl.; 2, Hebeme Soleirolii.

OLD GARDENING BOOKS: *G. B. C.* Your old books by Mawe and Macgillivray are not likely to realise a large sum, but it may be well worth your while to advertise, if you propose to sell them.

Communications Received.—O. V. D.—C. I.—G. N. S.—H. T.—W. M. M. D.—R. W. L.—W. A.—C. B.—W. F. G.—T. E. F.

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ILLUSTRATIONS.

ARMY CULTIVATION IN FRANCE.

THE great contribution which the Armies in France have made to food production, both on a large agricultural scale, and on a small scale by intensive cultivation, deserves to be widely known and appreciated.

From small and unostentatious beginnings by certain units, it has grown to a vast undertaking, organised in part through the several Armies, and in part by a Headquarters Staff under a Director of Agriculture, until to-day it is the hobby of the Army in France. As our illustration in fig. 80 shows, even within range of enemy guns not only cultivation but vegetable shows have been carried on with enthusiasm and success.

How great is the good which has been achieved it is impossible to exaggerate; but when the importance of fresh vegetables in maintaining health is remembered, the fact that at the present time the Army in France is supplying itself with upwards of 100 tons of vegetables a day, will show that, as measured in terms of health alone, this cultivation and its results are worth an army corps of doctors. The importation by the Armies in France of Scotch and Irish seed Potatos has, we are informed, resulted in extraordinary large crops indeed, it is stated by those in a position to know that the average yield of main crop Potatos in the fields and gardens under Army cultivation in France amount to 10 tons to the acre. Even admitting that the large supplies of manure which—no longer burned, as was the case often in the early, extravagant days—are available, this average, if it be actually achieved, is a remarkable testimony to the success with which H.M. Forces accomplish everything they undertake.

When in the early days, before Army cultivation became the mode, a large scheme of cultivation was sanctioned by the Army Council, one of the officers to whom it was expounded observed: "But this is more than the Germans are doing"; but when the reply was given, "That is why we are going to do it," he became a converted enthusiast. The remarkable results which have been achieved in France are, of course, due in the first place to the fact that the Armies contain large numbers of the finest growers of Great Britain, so that when men of experience are wanted to take charge of Army agricultural and horticultural operations there is no difficulty in finding them. Nevertheless, when the appalling labour difficulties which a year or more ago beset the High Command are taken into account, the extent of the area cultivated and the quality of the crops produced reflect the highest credit on the Armies in France. Measured in money values even, the vegetables produced in France during the present season are estimated to be worth £52,000, and this at a price of 10 centimes a pound; in as much as the present price of vegetables in France is said to be about 35 centimes a pound, the value of the Army vegetable produce may be placed at over £150,000.

Although it lies outside our subject, the work of cultivation done by the Armies at home must not remain unmentioned. We believe we are right in saying that the area cultivated largely by spade labour by the Armies at home has been increased threefold in the past year, and now amounts to more than 6,000 acres.

It is an interesting instance of the thoroughness with which the soldiers have carried out their work that they have followed the advice of the Food Production Department, and have not neglected to spray their Potatos, with the result that in more than one case the Army gardeners have set an example of good cultivation to their civilian neighbours; and have even protested against the neglect of spraying by those neighbours. Nor has the practice of horticulture been confined to H.M. Forces at home and in France. Wherever they have found themselves in Salonika, in Palestine, or in Mesopotamia they have put in practice the apothegm of Candide, "Let us cultivate our gardens." The fresh food which these part time Army allotment holders have raised has been a powerful means of maintaining the health of the Army, and it is certain that if ever again which Heaven forfend! British armies take the field, they will equip themselves not only with artillery and all the other munitions of war, but also with a cultivation corps.

This is among the things which to the uninitiated seem crazy, but which to those who know anything about the effect of diet on health is only common sense, and it is vastly to the credit of the High Command that the essential value of the apparently unnecessary was perceived so long ago, and orders issued making it possible for armies to become, in part at least, self-suppliers. The successful efforts of the Army Council to promote cultivation have not been confined to the issue of orders. Nearly two years ago the Army Council established an Army Agricultural Committee, under the chairmanship of Viscount Harcourt—who, as our readers know, is a keen and accomplished horticulturist. This Committee has rendered valuable service, with the object of promoting and providing financial assistance to Army cultivation.

The energetic assistance which the Royal Horticultural Society rendered to camps and depôts in France in the early days of the war deserves to be remembered. Thanks to the generosity of the Society several hundreds of gardens were supplied with plants and seeds, and the origin of the present popularity of gardening in France is to be traced in large measure to the forethought and munificence of the R.H.S.

Finally, we would offer the suggestion that if, even when Leagues of Nations have become established, standing armies are still found necessary, horticultural and agricultural practice may be made part of their peace-time training.

ORCHID NOTES AND GLEANINGS.

LAELIO-CATTLEYA MANBEUGE.

A FLOWER of a new hybrid named Laelio-Cattleya Manbeuge, raised between Cattleya Rex and Laelio-Cattleya Ophir (C. Dowiana aurea × L. xanthina), is sent by the raisers, Messrs. Sanders, St. Albans. The bloom has a strong resemblance to that of C. Rex, but is florally far superior to that species, and possesses the clear yellow tints which L. xanthina usually transmits to its progeny. The broad, flat sepals are light canary yellow, and the effectively disposed petals slightly lighter in tint. The base of the lip is bright yellow, the front light mauve-shaded crimson-purple, the margin white, the undulated margin. A series of branched yellow lines extend from the base of the lip to the centre. The pollen masses are like those of Cattleya, and in the form of the flower and its good substance the Cattleya parent dominates.

INTERESTING LONDON TREES.

THE present season will long be remembered as one in which trees have been particularly fruitful. Rarely has the Catalpa produced its spikes of curiously marked flowers in such abundance as during the summer of 1918, trees both large and small rivalling each other in their wealth of bloom. The finest specimen in Manchester Square has never been known to bear such quantities of its ever-popular flowers as during the latter end of July. The Ailanthus has everywhere likewise been unusually freedom, the not very showy greenish white clusters of flowers being in most cases produced in such abundance as to attract attention. Nearly approaching the latter in appearance is the Honey Locust (Gleditschia), which in many parts of London has flowered with unusual freedom. There is a fine specimen in front of the secretary's house in the Royal Botanic Gardens, Regent's Park, is the Caucasian Pterocarya. P.

tuxuntolia), which, near the Victoria Gate in Hyde Park, has been a source of wonder to visitors. The curious, drooping flowers, which hang downwards at right angles to the branches for a foot and more in length, render this one of the most interesting of hardy trees. The largest Pterocarya in London is growing in the City of London Cemetery, where also may be seen a goodly specimen of the rare, black-fruited Thorn (Crataegus nigra). In several of the parks and private gardens the Judas tree (Cercis) has flowered with unusual freedom, in some cases even young specimens have produced the deep, rosy purple flowers which distinguish this species. Rhus Osbeckii has flowered freely in Ruskin Park, where are the only specimens of this rare and beautiful Sumach that I have found in the Metropolis.

The Tulip Tree (Liriodendron tulipifera) is a capital subject for town planting, and may be found in good condition in several of the parks, notably at Golder's Green, where there is by far the largest specimen of its kind in London. Both this tree and the still rarer Liquidambar may be seen in a flourishing state in the grounds of the Royal Botanic Society. Here Battersea, though perhaps equalled by the far-spreading specimen in Waterlow Park, where a healthy, vigorous growing tree has spread laterally to a distance of 30 feet. The Tamarisk by the lake-side in the same park has quite outgrown its normal dimensions, and some of the stems are fully 20 feet high, and girthing 2½ feet at a yard from the ground. The magnificent Hickories in Waterlow Park are by far the finest in London, other species of interest at the same place being the Paper Birch (Broussonetia papyrifera), Honey Locust, and Magnolia acuminata. The fine Mulberry tree, though old and decrepit, is yet making a brave stand for existence, and should, with care, exist for many a year. Here also is a good example of the Maidenhair tree, Ginkgo biloba.

Amongst the many species of Oak, none excels the Turkey Oak for town planting, and in Ruskin Park there is a huge specimen, the stem of which girths 12¼ feet at a yard high, the branch spread being 100 feet in diameter. It is questionable whether a larger tree of the kind is to be found in the County of London—certainly not in the Metropolitan area.

Both the Cockspur and Tansy-leaved Thorn (Crataegus Crus-galli and C. tomentosa) produced an abnormal quantity of flowers, and now show a rich harvest of fruit. The rare and interesting Celtis australis and Koelreuteria paniculata both flowered in Islington Cemetery during the past summer. *A. D. Webster.*

wards they seem to deteriorate and fall an easy prey to disease of one kind or another. That this is largely a question of soil and climate is shown, I think, by the fact that in the garden of my friend, Monsieur Denis, of Balaruc-les-Bains, in the Département of Hérault, several of these Irises, which decline to flourish here, not only increase and continue to flower, but even produce sound seeds. I am indebted to M. Denis for many of the facts contained in the following notes.

There is another circumstance which has vastly increased the difficulty of arriving at anything like a satisfactory account of these white Irises, and that is that in the East, and especially among the Mussulmans, white Irises are frequently planted in graveyards. I am not aware that the custom has any definite religious significance, but it seems to be undoubtedly a fact that I. albicans is a native of the mountains of the Yemen district of Arabia and that it has been carried thence by the disciples of Mohammed almost as far as their religion itself has spread. I. albicans was first described botanically as growing near Almeria, in Spain, whither it had doubtless been imported by the Moors, who took it also into Sicily and into

FIG. 30. VEGETABLES GROWN IN THE FRENCH WAR AREA.
(See p. 203.)

NOTES ON IRISES.

SOME WHITE POGONIRIS.

OUR knowledge of the various white-flowered bearded Irises is still in a fragmentary and unsatisfactory condition, but it may nevertheless be worth while to put on record such data as have by degrees been accumulated. The investigator into the origin and relationship of the various species and forms, who pursues his enquiries in England, is greatly hampered by the fact that it is extremely rare for the known forms of white, bearded Irises to produce apparently sound seeds in our gardens. Moreover, it is by no means the case, unfortunately, that these white Irises will always continue to flower here. Newly imported rhizomes seem to bring with them sufficient vigour to flower in their first year, but after

Asia, whence it has more than once been sent from Samsun and Mardin, as well as from Persia. From Spain it was apparently conveyed to America, where it has escaped from cultivation and become more or less naturalised in Mexico and in more than one place in South America. It has also spread from Spain to the South of France and given rise to the name of the village of Les Onglous (Provençal for Irises, apparently), a short distance to the west of Cette, on the coast of the Mediterranean. There it grows in millions on the sandy banks among the vineyards, where the vines grow by the seashore to within 20 feet of high tide. M. Denis informs me that the plants, which I took to his garden from Les Onglous, never set seeds, though others have done so here on rare occasions. On the contrary, plants from Mardin, when pollinated from the Les Onglous plants, seed readily, and the seedlings have shown that this Iris reproduces itself from seed without producing any appreciable variations. This is precisely what we should expect of an albino form, and fortunately, in the case of I. albicans, we possess in I. Madonna the purple-flowered species of which it is the albino form. I.

Madonna was introduced from Arabia some ten or twelve years ago, and I do not think that anyone who will compare the growth of these two Irises, will doubt that they are mere colour forms of the same species.

Other albino Irises, such, for instance, as the white form of I. tectorum, breed absolutely true from seed when self-fertilised, and I have little doubt that sooner or later we shall possess white forms of all our purple Irises of the germanica and pallida groups. Some years ago I found in Dalmatia a tall, white pallida, which, however, has a very weak constitution in our English climate, and, though still alive, it persistently refuses to flower here. There is also in existence a white form of the well-known I. cengialtii, and a few years ago there appeared here a fine white form of the dwarf pallida of the eastern coast of the Adriatic, which promises to prove an admirable garden plant.

The Central European I. aphylla has also given me a white form, though in this case it is hardly a pure albino.

The well-known I. florentina is obviously nothing but a quasi-albino form of a purple germanica. I have obtained from the neighbourhood of Florence a slender, dark, black-purple germanica which closely resembles florentina in its habit, and, moreover, it is not at all unusual to find streaks or blotches of purple to appear in the flowers of florentina.

There is also to be obtained a so-called germanica alba, which is different from florentina and is the albino of some other of the numerous forms of germanica. I have also another form which I found in a roadside garden on the way up from Mattinghe to the top of Monte Maggiore, above Abbazia, in Istria. This has larger flowers than those of florentina and a white and not a yellow beard. In shape it recalls germanica atropurpurea, and may be an albino sport of that variety.

These various forms are sufficiently puzzling, but when we come to the various white Irises of the North-west Frontier of India our difficulties are vastly increased. It is these Irises especially which will not succeed after more than one or two seasons here, and I can only give M. Denis' experience of plants which have succeeded with him though they have failed with me. I. kashmiriana appears to be the white counterpart of a pale blue-purple Iris which is occasionally sent home from the neighbourhood of Srinagar, but which must not be confused with the Kharpot form of germanica. The latter has become naturalised there and is far more common, because more vigorous.

I. kashmiriana is distinguished from the white Irises already mentioned by its long, narrow spathes, which remain green till the flower has faded. This same character appears in I. Bartonii, which I took to be only a form of kashmiriana, but which M. Denis informs me comes true from seed. It is a smaller plant than I. kashmiriana, and its flowers are of a yellowish white, sometimes veined or suffused with purple. It is remarkable in having a number of long hairs on the inner side of the haft of the standards, whereas in kashmiriana there are only three or four short hairs. The original plants of Bartonii came from Kandahar, and M. Denis tells me that others which I received from Quetta and Abbottabad are slightly different forms and that all three reproduce themselves approximately true from seeds when self-fertilised, and remain distinct from I. kashmiriana.

In this connection it should be remembered that the real I. kashmiriana is seldom in cultivation in England. The forms obtainable under the name of "Shelford variety" or "Miss Willmott" are, as Foster himself told me, of doubtful parentage, and M. Denis finds that he obtains from them forms that are obviously akin not to kashmiriana but to mesopotamica.—*W. R. Dykes, Charterhouse, Godalming.*

be that of Sir Francis Younghusband, I wrote to him recently, and he was good enough to inform me that he knew nothing of the plant or its reputed discoverers. Sir David Prain, who was with the expedition, also feels sure no such Blackberry was found.

The Himalayan origin is therefore extremely doubtful, to say the least. When in Germany in the autumn of 1912 I was impressed with a very fruitful Blackberry called Theodore Reimers, and had plants sent to me the following winter. After several years of comparison I find it identical with the so-called "Himalaya," and have no doubt that this fruit found its way to America and there underwent the rechristening which often follows migrations.

Theodore Reimers is figured in the *Pomologische Monatshefte*, 1904, p. 49. It seems that seeds were raised from a plant found in a neighbour's garden by Garteninspector Theodore Reimers in 1889, and one of these produced the berry under consideration. All the evidence, therefore, points to the fact that it is descended from a European species of Rubus, as is indeed suggested by its appearance.—*E. I. Bunyard.*

APPLE JAMES LAWSON

THE new Apple named James Lawson, illustrated in fig. 81, is a cross between Cellini and

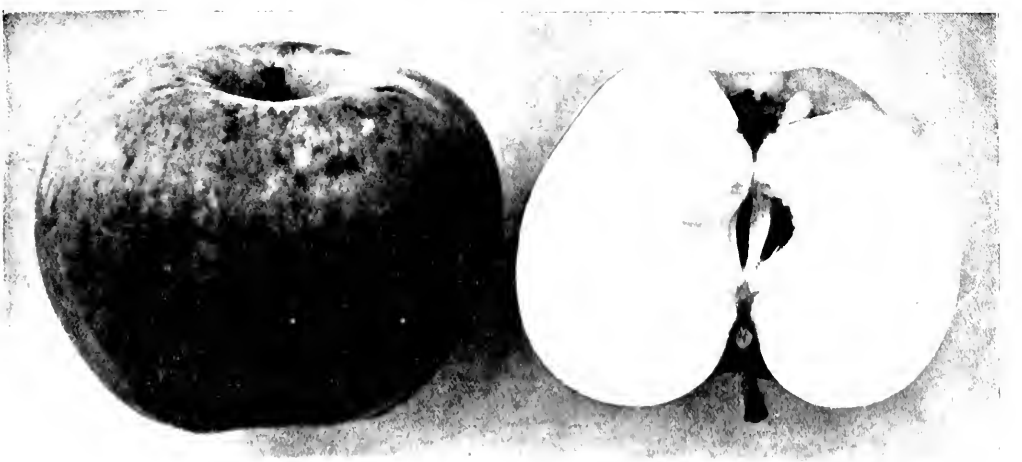

FIG. 81.—APPLE JAMES LAWSON.

FRUIT RECISTER.

THE HIMALAYAN BERRY.

THIS remarkable prickle Blackberry has been grown in this country for some years, and though the fruits are lacking in flavour it is without doubt a very remarkable addition to the list of trailing Rubi.

I have been trying for some years to get definite information as to its origin, and feel pretty certain that its source is European and not Indian.

Mr. Alfred Mitting, an American nurseryman, who specialises in these berries, gives the following historical particulars:—

"Unknown to the rest of the world, it had been growing for centuries in the Himalaya Mountains, when a British military expedition went north from India into Persia and Thibet, found it and brought back some plants. A Seattle firm brought the first plants into the United States in 1905, and since then Himalaya has been developed and tested until we know that for many purposes it is so altogether different and new and good that it is an invaluable addition to the fruits American farmers can grow."

I think that the expedition referred to would be that of Grossheim and resembles both parents in appearance. The skin is yellow, streaked with red. The flesh is juicy, firm and of good flavour. It is a dessert variety, ready for use in September. It received the R.H.S. Award of Merit on September 24, 1918, after trees in fruit had been inspected by members of the R.H.S. Fruit Committee in Messrs. H. Cannell and Sons' nursery at Eynsford, Kent. The fruits are illustrated natural size.

ON INCREASED FOOD PRODUCTION.

CLOSE PLANTING OF POTATOS.

WHILE dealing with the value of phosphate manuring for Potatos, Mr. Taylor (p. 169) stated that the experiment showed the folly of planting too closely. This is true in many respects, but not always, because the nature of the soil has to be taken into consideration. Last March I bastard trenched some grass land for Potatos, and the top soil varied from 3 inches to 8 inches in depth, with a subsoil of solid gravel. The soil itself is very sandy, and during the fine weather of March last it looked like so much dry sand or dust after being turned up for

a day or two. I concluded it would be useless to allow more space for Potatos than 2 feet by 1 foot. I planted the poorest part of the ground with Arran Chief, King Edward VII., and Up-to-Date. The first named grew 7 feet high in a garden the previous year, and the haulm had to be staked. This year, in the sandy soil, it did not exceed 12-15 inches in height. Up-to-Date made a second growth and continued green till the middle of October. Neither of the varieties was at any time crowded, and the top growth of Arran Chief never met over the furrows, except at one end, where the soil was deeper. Up-to-Date gave the heaviest crop, followed by Arran Chief, and most of the tubers were ware and seed size. I merely make these statements to show that the character of the soil must be taken into consideration before determining the width apart at which to plant. I have seen some of Mr. Taylor's cultures, and know that he is nothing if not thorough, and he is successful, too. In a trial of Potatos at Wisley last year the heaviest weight per rod was dug from Arran Chief, planted at 2 feet by 1 foot. The heaviest weight per root of the same variety was from tubers planted 30-36 inches × 16 inches. *J. F.*

POTATO YIELDS.

THE following results of ten varieties of Potatos grown alongside and treated identically, after Wheat, with a catch-crop of Clover ploughed in on sandy loam soil, may be of interest to readers. The cultivation was on a farming scale and not carried out under gardening conditions. Although the yields may not be as much as those to be expected from garden cultivation, the comparisons between the various varieties are nevertheless of interest:—

	Tons per acre
The Ally (Scotch seed)	15
Great Scott	15
King Edward	14½
Kerr's Pink (Scotch seed)	13
Arran Chief	12½
Ninetyfold	11½
British Queen	10
Up-to-Date	10
Dargill Gem (Scotch seed)	9½
Iron Duke (Scotch seed)	9

The sets were planted on April 23 and 25, with a good dressing of dung in the drills and 2 cwts. of sulphate of ammonia per acre. As the land is required for Wheat this autumn the Potatos were lifted early in September, before the tops had thoroughly died down, with the exception of Ninetyfold, which was lifted in a ripe condition on August 5, and British Queen in an almost ripe condition on August 10. All the crops were grown from Scotch seed once removed, except the four duly marked new Scotch seed.

In manurial tests carried out with the variety Great Scott the omission of sulphate of ammonia caused the tops to be lighter in colour, and the plants ripened rather earlier, and the yield was smaller to the extent of over one ton per acre. On the contrary, a dressing of 3 cwts. per acre of sulphate of potash 95 per cent. raised the yield over 3 tons per acre, but the tops showed no appreciable difference during the growing season. *T. E. Milne.*

AUSTRALASIA.

EUROPEAN TREES IN TASMANIA.

EVEN some Tasmanians who have been to England have a theory that European trees do better here than at home, but I think them wrong. Northern trees in the South of Tasmania are disappointing to me, if only they would thrive as well, and were as handsome and as introduced weeds, this would be a better looking place. Excluding fruit trees, generally speaking, they are not abundant. Beyond Pinus (usually *P. insignis*) round homesteads, Willows by creeks, a few Oaks and Poplars, and old Thorn hedges (almost invariably neglected), there is little more to catalogue, and a particularly grievous fact is that I have not yet seen a Beech tree worthy of the name. Nor does exotic tree growth in general seem to me anything exceptional; but, of course, we have only arboreal tree babies here, for what is 100 years in the life of an Oak? In the North things are rather better. In particular I have a good word to say for exotic trees generously planted in the celebrated Launceston gorge. Quite by accident I got to the place of a man as keenly interested in, and as wise about, exotic trees as anybody in the island. He must be thought a crank, because the rows nearest the road in his orchard form an arboretum, and few cultivators here soar beyond the strictly utilitarian. Also he has more than one modest exotic plantation, and has planted trees so extensively as to have thirty or so kinds of Oak, to example. He informed me that deep-rooting trees do well with him, but shallow-rooting ones are disappointing. And those that thrive, really do thrive. He showed me an Oak shoot 8ft. or 9ft. in length, while young Pines had made a similar annual growth. I should be grateful to any reader who would send me acorns of either *Quercus australiana*, *Q. coccinea*, *Q. Farnetto*, or *Q. pubescens* to gladden the heart of my friend. They are unobtainable in Australia. A tree which usually does as well as any here is the London Plane. Commercially, but only where there is a great depth of rich soil, there should be money in Walnuts in Tasmania. They thrive amazingly, and the nuts fetch high prices. The Spanish Chestnut is almost unknown, nor have I noticed large Horse Chestnuts. A tree which grows to an amazing size is the Mulberry. I have seen specimens far surpassing the largest known to me at home. *I. Garnett, Cambridge, Tasmania.*

SHODDY AS MANURE.

ONE of the fruit grower's greatest difficulties is to obtain enough farmyard or stable manure. It is possible to buy stable manure from London or other cities; but this is very dear and not of great value. In a crop of Potatos grown this year one could plainly see which part of the field was dressed with local manure and which with London dung, the former giving the heavier yield. Were it not that organic manure is essential on my light land, I doubt if London manure would be worth its price. The last consignment cost 5s. 6d. per ton on rail in London, and carriage brought it up to 9s. 3d. at the local station. By the time it has been carted home it costs between 11s. and 12s. per ton, and added to this is the heavy item of spreading.

This autumn I have, for the first time, bought several trucks of wool shoddy. In normal times this is considerably cheaper than dung, and, even under present conditions, it has the advantage. It is selling now at 12s. 6d. per unit of ammonia per ton delivered at the local station. Root growers, who use it largely, consider that two tons per acre of shoddy containing 6 per cent. of ammonia are equal to 20 to 24 tons of London manure; and I find that the former dressing costs about £7 15s. on the farm, as compared with at least £11 10s. for 20 tons of London dung. Then there is the labour of spreading, which is much lighter in the case of shoddy. If the shoddy is dry there is little difficulty in distributing two tons over an acre, but it is almost impossible with a wet sample, which is naturally much less bulky. My figures are probably hardly fair to dung, which is an all-round plant food, whereas shoddy supplies only nitrogen and organic matter. I am, however, pleased with the appearance of the shoddy dressing, because it promises to supply plenty of organic material of a lasting character, and that is what the soil needs. *Market Grower.*

The Week's Work.

THE KITCHEN GARDEN.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

Asparagus.—The forcing of Asparagus is very easy, and a supply of succulent stems may be had in December and January if crowns are introduced into gentle warmth. A hot bed made of leaves and manure is preferable to forcing by means of hot-water pipes, as the fermenting materials will provide a moist atmosphere. A bed of Oak or Beech leaves about 4 feet in depth will provide a steady bottom heat for two or three months, and may be used successfully for three or four batches of crowns. Brick pits are the best structures in which to form the hot-bed; failing these, frames may be set on a mild hot-bed about 4 feet high. When the heat of either kind of bed has declined to 80° cover the bed with about 4 inches of light soil, but the roots should not be placed in position until it is seen that the heat of fermentation is not likely to exceed 80°. The requisite number of roots should be carefully lifted and as little exposed to cold, drying winds as possible. Place them closely together on the surface of the bed and cover them with at least 3 inches of fine, light soil. If the latter is moist little or no water will be needed, but, as a rule, the roots are better for being lightly moistened with tepid water. At no time should the roots suffer for want of moisture, or the quality of the shoots will be impaired. If high temperatures are guarded against there will be no necessity to admit much air; the temperature should be kept as near 60° as possible.

Shallots. Examine these bulbs carefully during the present month, and pick out any that are diseased or show the least signs of decay. To keep well the bulbs must be stored thinly in a cool place.

Parsley. See that Parsley in frames is well ventilated during fine weather, the soil stirred frequently between the rows, and all decayed leaves removed. Surplus plants in boxes may still be transplanted in frames to provide leaves for use in spring.

Autumn-Sown Onions. Hoe the soil between the rows of seedling Onions once or twice during fine, mild weather, but on no account make the ground too loose or encourage the plants to grow too quickly. In damp weather hand weeding is the best.

Gas Lime. The present is a suitable time to apply gas lime at the rate of four or five bushels to each ten-rod plot, spreading it evenly over the surface. After lying exposed until next spring or early summer, according to the amount used, the lime may be dug in and the ground cropped.

Potatos. Examine seed Potatos and remove any diseased tubers. They must be kept safe from frost, and paper mats or other suitable material should be kept in readiness for use in times of severe frosts.

PLANTS UNDER GLASS.

By E. HARRISS, Gardener to Lady WANTAGE, Lockinge Park, Berkshire.

Richardia africana (Calla). — Some of the strongest plants of the common Arum may be placed into warmth with a view to having them in flower by Christmas. The roots should be given liquid manure at every alternate watering, as Richardias are gross feeders when in active growth. The rest of the batch should be kept in a cool house, using fire-heat only to keep out severe frost. Fumigate the house at fortnightly intervals to destroy aphis.

Early-flowering Gladioli. Early flowers of Gladioli are always most useful for purposes of cut blooms. The corms should be potted as soon as they arrive from the seedsman, as it is important that they have plenty of time to become well rooted before attempting to force them into flower. Place them in 6-inch pots filled with a fairly rich compost, and plunge the pots in a bed of ashes in a cold frame. When

the shoots have grown about an inch or two remove the pots from the ashes and place them near the glass in a cool house, where they should remain during the greater part of the winter. When top growth is well advanced, and the pots are full of roots, batches of the plants may be placed in a warmer house for forcing.

Bulbs in Pots. Examine all bulbs growing in pots and other receptacles at regular intervals. When they have made an inch or two of top growth the pots containing them should be taken from the bed of ashes and placed in a cool frame. During times of very severe frost cover the frames with mats, litter, or similar protective materials. Place batches of the early flowering kinds in the forcing house at intervals according to requirements. A constant watch must be kept for rats and mice, which are capable of doing great damage to bulbs in a short time. Mice are easily dealt with by trapping. Rats may be poisoned, and this should be done by an experienced person.

Palms.—During very wet weather some of the outdoor stuff may be employed in cleaning Palms. Scale insects are the worst enemies of the Palm, and bad infestations are very difficult to eradicate. If the leaves are kept moistened with an insecticide the removal of the insects will be easier. Syringing the whole of the plants thoroughly with soluble paraffin at intervals of a week or ten days is the best way of keeping Palms clear of insect pests.

Euphorbia pulcherrima (Poinsettia). The bracts of Poinsettias will keep fresh for several weeks after they have fully developed provided the plants are grown in suitable conditions. Keep the atmosphere of the house quite dry and the roots on the dry side. Admit air whenever outdoor conditions are favourable, and circulate a little warmth in the water pipes at all times. During times of dense fog keep the house closed.

THE ORCHID HOUSES.

By J. COUTTS, Gardener to SIR JEREMIAH COLMAN, Bart., Gatton Park, Reigate.

Odontoglossum. Plants of O. crispum that are nearing the completion of their growth should be suspended or stood near to the roof glass in the cooler part of the Cattleya or intermediate house. Reduce the supply of water at the roots gradually until after the new pseudo-bulbs are thoroughly developed, moisture should be withheld for longer periods, affording only sufficient to prevent the pseudo-bulbs from shrivelling. This treatment should be continued through the winter, and until flower spikes are seen to be pushing from the centre of the young growths. O. grande, O. Insleayi, and O. Schlieperianum grow satisfactorily during the summer months in a cool house, but now they should be grown near the roof glass in a house having an intermediate temperature. Plants of O. Edwardii Skinneri and O. luteopurpureum are forming roots at the base of the young growths, and any in need of fresh rooting material should be given attention. A compost consisting of Osmunda fibre or M fibre cut up rather roughly, with a liberal addition of crushed crocks, will be found suitable for these Orchids.

Zygopetalum and Allied Genera. The partially developed pseudo-bulbs of Zygopetalum Mackayi are sending out flower spikes, and from now onwards until the flowering season is over, extra care must be taken in watering the roots, for an excess of moisture may cause the leaves to become spotted. Water should only be afforded when the compost is dry, when sufficient should be given to soak the materials thoroughly. Plants of Z. crinitum, Z. Perrenoudii, Z. Prothesianum, and others of that class, also Zygo-Colax Wyganianus and Z. C. Charlesworthii, are in full growth, and should be afforded liberal supplies of water at the roots. All these plants thrive best in a moist, shady position in the cooler part of the intermediate house. Z. rostratum and Z. Boehlingianum are both growing freely, and should occupy a shady position in the warmest house. The surface moss should be sprinkled frequently in order to keep it green and healthy. Plants of the Bollensea section, such as B. coelestis, Pescatorea Lehmannii, P. Dayana, Chondrorhyncha lindenata and C. Chesterton are forming fresh roots, and specimens that require fresh rooting materials should be attended to in that respect. Zygopetalum maxillare and Z. Gautieri may, where necessary, be given more rooting space. Use a compost consisting of equal portions of Osmunda fibre or M fibre and Sphagnum moss cut in rather short particles, with a liberal addition of crushed crocks. These Orchids have a rambling habit, and are not suitable for growing in pots or pans; they do best fixed to a portion of the stem of a Tree Fern. If necessary, the rooting space may be extended by wiring another piece of stem on the top of the old block. The roots should be kept moist at all times. The plants thrive best in a moist shady position in the warmest part of the intermediate house.

FRUITS UNDER GLASS.

By W. J. GUISE, Gardener to Mrs. DEMPSTER, Keele Hall, Newcastle, Staffordshire.

Mid-Season Vines. Successional houses in which the bunches of Grapes are still hanging should now be cleared and every opportunity taken to assist in the work of pruning the Vines and cleansing the houses before the end of the year. The instructions given in the issue of October 12 for early Vines may be followed with successional houses. The removal of the berries from over-crowded bunches, and permitting a moderate application of water to the border, are two important points of remembrance. Top-dressing cannot be performed too quickly, and where the Vines have the run of internal and external borders the renovation of the latter should be carried out at this season. If the Vines are in a healthy condition a top-dressing, 2 or 3 inches in thickness of a suitable compost and subsoil, after removing all the old mulchings and exhausted soil down to the young roots.

Late Vineries. Unremitting attention should be given to the Vines in which Grapes are hanging in order to keep the berries plump. This is the most important factor in the keeping qualities of the Vines, and the chief cause of the shanking of the berries. Maintain a dry, airy atmosphere, slightly on the warm side, by allowing a gentle circulation of heat in the pipes until the leaves fall. A temperature ranging from 45° to 50° will keep the Grapes free from moisture, but any fluctuation below this will cause the berries to attract and hold moisture. Decay soon follows, and with frequent cutting out of decayed berries the bunches are spoiled. If such cases it is advisable to cut the bunches and place them in bottles containing water in the Grape room. Above all, avoid keeping the house damp for a lengthened period.

Tomatos. Plants in 8 or 9 inch pots for planting early next spring, should be placed near the roof glass. A temperature of 55° to 60° is necessary to keep the plants in a healthy condition. If this cannot be maintained through the winter it is advisable to discard the plants and reserve the fruit for an early start in the New Year. Even plants which are now ripening their fruits require a similar temperature. Water the roots very carefully, maintain a fairly dry atmosphere, and syringe only on the occasion of bright, favourable weather.

THE HARDY FRUIT GARDEN.

By G. DAY HUDSON, Head Gardener at Gunnersbury House, Acton, W.

Apples and Pears on Grass. Assuming that the annual mulch of soil around the trees has been kept two feet clear, it is advisable to extend the ring as the trees increase in size. When doing this scatter the soil around the stems and top-dress the roots with rather rich, fresh loam or well-rotted manure, allowing, of course, for the cropping proclivities of the variety in question. If the trees be of full age it will repay to remove some of the surface soil and replace it with fresh compost liberally mixed with manure. This will encourage the development of roots near to the surface. In the case of large Plum trees that have borne freely in the past two seasons a good dressing of fresh loam mixed with lime rubble would prove as well of strawberry. These trees also would have an area of cultivated ground around the stems as in this way more generous treatment can be given them.

Planting Trees. The work of planting fruit trees should proceed as quickly as possible, for while the weather stays very open and the ground is nearly every instance in good working condition there is no excuse for delay. A good deal of very short work and a proper concentration on this most important item will leave other matters for a time. If the trees do not yet to hand for everything be done in the way of preparation, so that they can be planted on arrival. Do not stop for any planting under foot of the roots. Have good soil or compost for covering the roots where the ordinary soil is not good enough for the purpose. Leave the mulching, if such be deemed advisable, until all the planting is finished, but give the watering to settle the soil.

Renewal and Extension. After the good results of last season's increase of fruit tree cultivation, there is every reason for the crops this year to be even above the average, and the value of fruit has been more than ever appreciated, not only as a luxury, but for its dietetic value. Let no available space on walls or fences be left bare. I have lately seen boundary fences covered with Loganberries (American), or Parsley Aphis. This was accomplished by keeping the canes pointed as a screen some 3 feet or so away from the fence. Last spring I advised the planting of standard trees in shrubberies, and I now repeat it. Trees on clean stems, as standards, are to be had, and often times these are better when rather tall, and just what is needed for the purpose. These may include Apples, Pears, Plums, and Damsons, even Quinces on most soils.

Painting Ironwork. Any painting of ironwork that may be needed should be done now rather than in the spring, such work must not be neglected, and the best material to use is oxide of iron paint, apply two coats after cleaning off any rust.

THE FLOWER GARDEN.

By G. H. P. THOMPSON, Gardener to the Earl of HARDWICKE, Tyringham, East Lotham.

Ranunculus and Anemone. These bulbous plants may be planted now for an early display of bloom next year. Anemones are well known, but Ranunculi are now seldom seen in gardens though at one time the quaint Turban and Persian groups were invariably grown in beds. The easiest strain to grow is the French, a free flowering and pretty group, but innocent of the high hue and doubling of the others. In planting, some care is required not to break the "claws." Plant about 3 inches deep, not more, and about 4 inches apart. A well worked, deep soil is desirable, with plenty of rotted manure incorporated. After planting nothing further will be needed by them till February, when the surface soil should be stirred and a dressing of soot dusted among the growing plants.

Storing Roots. Begonias will be quite ready to store after removing all the current year's growth from the tubers. Keep as much soil as possible on the tubers and store them in heaps in a frost proof building. Gladioli will also be in a fit condition for cleaning and the removal of old tobacco. At the same time all the little corms which cluster about the old ones should be preserved for increasing the stock. Our stock is dried and wintered in a cool Peach house, the corms lying on the border, a method I think to be preferred to placing them where they become very dry indeed, there are so many that a somewhat rough and ready way of keeping them has to suffice.

Rubus phoenicolasius. The winter beauty of this common shrub is not recognised to the extent it ought to be. Now that the leaves have fallen all the old shoots should be cut out, leaving only those of the current year. On sunny days the rich brown of these shoots is very effective, and it may be added the effect is heightened when groups instead of single plants are seen. Other Rubi may be treated similarly, also the green barked Leycesteria formosa and Pentantinus nepalensis, Corchorus japonicus, Deutzias. Willows should be left till March and then be cut hard back; if dwarfs, cut just below the surface, and, if standards, always allow for a few fresh strong shoots to start well back at the base. It is strange that so little is made of shrubs with beautiful bark.

EDITORIAL NOTICE.

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

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

Special Notice to Correspondents.—*The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.*

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 51°.

ACTUAL TEMPERATURE:—*Gardeners' Chronicle* Office, 41, Wellington Street, Covent Garden, London, *Wednesday*, November 20, 10 a.m. Bar. 30·4, temp. 41°. Foggy.

Ploughed-up Grass Land.

The experience of the past few years in ploughing or digging up and planting grass land has taught that not all crops are equally suitable for planting in the first year.

Broadly speaking, it is probable that the Potato has proved itself one of the best crops to plant—provided that the sets are encouraged to grow away from wireworm by a dressing of sulphate of ammonia at planting time. But it is pretty certain that there are some other crops which do even better than the Potato. First in order is Mustard, although this is a crop the extension of which is not wanted at the present time. Next to Mustard, as we are informed by one of our leading market gardeners, come Onions. Presumably this applies only to soils not too light in texture, but even so, it is information well worth noting, for in view of the great importance of the Onion as a food crop, and of the fact that we grow far fewer Onions than we consume, it is much to be desired that more ground should be put under this crop in the coming year. With shipping rates likely to rule high, the foreign-grown Onion cannot compete naturally with the home-grown article, and therefore it should be the duty of the State to encourage, and of the community of horticulturists to grow as many Onions as possible. Every ton raised at home, even after giving a proper return to the grower, means a saving of the pocket of the public and a certain measure of relief to shipping. There can be no doubt but that transplanted Onions, if grown on suitable ground, give good prospects of a large crop, and the fact that this vegetable does well in newly turned up grass land should be noted by those who have the supply of labour requisite for the cultivation of this crop. Nor is there any reason why the prejudice against red Onions should be maintained; in fact, one of the best of all croppers and a good keeper, is Weathersfield Red, which variety has the further merit that it does well on soils not too kindly disposed to the white-fleshed kinds. Nurserymen who are doing so much for food production have already in the past two years cultivated considerable breadths of Onions, generally with marked success, and it uncertainty with respect to prices did not act as a deterrent they would probably do more in the coming year. But it has to be remembered that the Onion is in any case uncertain in its yielding capacity, for it is very prone to the attacks of insect pests and fungous diseases.

Yet another crop which the experienced claim as suitable for cultivation on recently turned-up grass land is the Pea. Besides field Peas, those of the ordinary kind, as for example, Little Marvel, are said to do well and to escape damage from wireworm. This is probably due to the fact that Peas very readily, and indeed normally, in the course of their growth throw out adventitious roots, which stand a good chance of persisting even though the main root of the seedling may be attacked by soil pests.

Lastly, it may be mentioned that transplanted Tomatos take very kindly to ground in which the turf has quite recently been turned in, and here again is a crop of which considerably more than is now produced could be utilised, although, of course, the precarious nature of the English summer attaches a certain measure of risk to Tomato growing in the open.

The Gardeners' Royal Benevolent Institution.—We heartily commend to the notice and practical sympathy of our readers the following appeal, issued by Sir HARRY J. VEITCH on behalf of the funds of the Gardeners' Royal Benevolent Institution: "As treasurer of this institution for more than 50 years, and therefore thoroughly acquainted with its excellent work, I plead most earnestly for financial help in this time of great stress when the need is so urgent. The absence of the usual festival dinner in aid of the funds, held without intermission since 1845 until the present terrible war broke out, has sadly lessened our income, necessitating drawing upon an emergency fund, which is now almost exhausted. In these circumstances a very warm friend of the institution, who wishes to remain anonymous, has most generously offered £250 this year, and to continue the amount annually until one year after the cessation of the war, provided three other similar sums or lesser amounts amounting in the aggregate to £750 are obtained, or to give £500 on the same conditions if £1,500 is raised. Towards this the Committee have already received and gratefully acknowledge more than £250. I therefore appeal to the generosity of your readers in order that the Committee may take as full advantage as possible of this very generous offer. HARRY J. VEITCH."

The "Gardeners' Chronicle" in Mesopotamia.—Private A. C. DAVIS writes: "Just a line to let you know that I am getting the *Gardeners' Chronicle* safely each time we receive a mail. I thank you for the prompt and regular manner in which you despatch it to me. As in pre-war days, it is read with great interest by myself and others who in civilian life are gardeners. We are glad to have the old paper out here with us, as it helps to keep us in touch with our work while we are far away in Mesopotamia. When we return we shall be very keen and eager for work, and no doubt the head gardeners of England will be glad to see us again. The same address will still find me. I wish the *Chronicle* every success."

Ghent.—The evacuation of Ghent by the Germans and its reoccupation by Belgian and British troops have given rise to wonderful scenes of rejoicing in this great horticultural centre, and many British horticulturists will join with their Belgian confreres in thankfulness that the peaceful pursuit of commercial gardening may once more be carried on in this city of nurseries. Had there been no war the present year would have witnessed the holding of one of the great Ghent Quinquennial Horticultural Exhibitions for which the city is famed throughout the world. We hope the day is not far distant when those interested in the "gentle art of gardening" may be permitted to meet once again at the Floralies to congratulate the gardeners of Flanders upon their stand for liberty, their liberation from bondage, and their wonderful horticultural productions.

The Corn, Pulse, and Hay Crops. — The yield per acre of all the corn crops in England and Wales this year is above the average, and with the single exception of the small area of Beans, the total production is also greater; while all are better, whether judged by the yield from an acre or by total production, than in 1917. The yield of Wheat is estimated at 33 bushels per acre (2 bushels above the average), and the total production, upon the greatly increased acreage, amounts to 10,534,000 quarters, which is the largest quantity harvested since estimates were first officially collected in 1885, and exceeds last year's total by 3¼ million quarters. A certain proportion of the Wheat has been damaged, especially in the northern districts and in Wales, but the condition of the bulk is satisfactory. Barley has yielded 32 2/5 bushels per acre, or half a bushel more than the average; the total production of over 6 million quarters is the largest since 1914. The production of Oats is almost 2 million quarters more than the previous highest on record (1907), and amounts to 14,336,000 quarters; the yield of 41¼ bushels per acre is the best since 1910. Mixed or dredge corn, distinguished for the first time, produced an additional 620,000 quarters from 139,000 acres. The damage to Barley and Oats has been considerably more serious and widespread than in the case of Wheat. Beans have given 29 2/5 bushels to the acre, while Peas, with 27½ bushels, show the best return of the last ten years. Taking all the five corn crops together the gross production in England and Wales was no less than 81 million quarters, or quite 35 per cent. more than in 1917. The yields of seeds' hay (Clover, Sainfoin, and grasses under rotation) is practically equal to the average, viz., just 29 cwts. per acre; but that from the permanent grass (21 4/5 cwts.) is 4/5 of a cwt. below the average. Owing to the increased production of corn, the total amount, viz., almost 2,100,000 tons of seeds' and nearly 4,700,000 tons of meadow hay, is less than that taken last year, in spite of the better yield per acre. The total production of hay of both kinds amounts to 6,785,000 tons, or fully three-fourths of a million tons short of last year's total, and nearly 1,100,000 tons less than the average from the much larger area of the ten years 1908-17.

A Gardener Candidate for Parliament.—The list of parliamentary candidates for the East Hertfordshire division includes the name of Mr. CYRIL HARDING, Secretary of the British Gardeners' Association. Mr. HARDING is standing as a Labour candidate, and his opponents are Mr. PEMBERTON BILLING (Independent) and Mr. E. B. BARNARD (Coalition).

Distribution of the Potato Crop.—The scheme adopted by the Ministry of Food for disposing of this year's Potato crop is as follows: Prices to producers will vary in different areas; prices to consumers for the same grade of Potato will be uniform throughout England and Wales. Potatos will be supplied to retailers at a uniform price, fixed conditionally, at £9 per ton, Grade I., £7 per ton, Grade II., the price being reckoned to retailer's nearest railway station. Growers selling to wholesale dealers will be entitled to receive assessed price within 14 days, and if they do not do so they are entitled to apply to Potato Control Committee (in a de-

hert zone) or Zonal Committee (in a surplus zone) of their zone, as the case may be. Wholesalers are entitled to charge a commission of 7s. 6d. per ton; they must account to the Ministry of Food for the difference between the price paid to growers and price obtained from retailers after deducting commission (at rate of 7s. 6d. per ton) and necessary charges. As a general rule, only one wholesaler's commission may be charged in respect of any lot of Potatos, and if they pass through the hands of more wholesalers than one, commission must be shared. Special cases will, however, be considered, and an additional collecting dealer's commission not exceeding 3s 6d per ton may, upon application for the necessary licence, be allowed in cases of proved necessity. Both retailer's buying price and wholesaler's commission are subject to revision when further information as to actual costs has been obtained. No person may deal in Potatos by wholesale unless he is registered by the Ministry of Food, or by retail unless registered by the Food Control Committee of his district. Wholesale dealers will not be allowed to sell Potatos to any person other than registered retailers or wholesalers, unless they hold a licence to do so from the Food Commissioner of their area. Such licences will be granted to wholesale dealers who can show that they have a regular trade in supplying Potatos to caterers, fish-friers, institutions, or other large customers, and will be limited to sales of Potatos to such large customers. Subject to restrictions imposed by the Potato Control Committee or the Zonal Committee, growers will be permitted to sell Potatos to any registered wholesale dealer in their zone, but may not sell to anyone else except under licence to be obtained from the Food Commissioner of their district. Such wholesale licences will be made at the appropriate price for the class of sale authorised, but growers of more than 5 acres will be required as a condition of obtaining such licences to grow areas so adjusted as to secure that their net profits are equivalent to the greater price fixed for their district together with the extra cost required to cover cost of additional cartage and a maximum of 2s. 6d. per ton. Growers of less than 5 acres will not as a rule be required to grow any, but if they wish to be registered to sell without licence (Grade II. Potatos) in the counties of Berks, Bucks, Herts, Oxford, Sussex, and Wiltshire they will be required to grow such acreage. Growers will not be allowed to sell under the Order Potatos to a merchant at a price of £5 10s. per ton, f.o.r. Unclassified Potatos for which a market cannot be found in the ordinary way will be taken over by the Ministry of Food at the fixed price of £5 per ton.

Government Grants to Agricultural Societies. The Joint Parliamentary Secretary to the Board of Agriculture (Sir R. Winfrey), in reply to a question asked in the House of Commons by Colonel Lamb Wilson, whether any grant of public money, and, if so, of what amount, is made, either by or on the recommendation of his Department, to the Agricultural Organisation Society or the Agricultural Wholesale Society, whether there is any connection, and if so, what, between those two bodies; and whether societies or individuals affiliated to the Agricultural Organisation Society receive any special treatment with respect to discount to goods purchased from the Agricultural Wholesale Society, stated that grants of public money to the Agricultural Organisation Society have been made since 1909-10. Those for the current financial year are £10,000 from the Treasury through the Food Production Department, £4,000 from the Small Holdings Account, and from the Development Fund a block grant of £5,000, together with a grant equal to four times the amount of the Society's income from contributions from affiliated farmers' societies during the current year, and a grant equal to the amount of the subscriptions received in the same period. The grants are all subject to Treasury sanction. No Government grant is made to the Agricultural Wholesale Society. That society is the central trading body of the agricultural co-operative movement, the Agricultural Organisation Society being a purely propagandist, organising, and advisory body. The Agricultural Wholesale Society was formed under the auspices of the Agricultural Organisation Society, and on its initiative, as an essential part of its work of organising co-operation, but there is, I am assured, no financial connection whatever between the two bodies. In reply to the third part of the question, I may say that, as the Agricultural Wholesale Society is an independent body receiving no grants whatever from the Government, it is free to make whatever terms it likes in regard to its trading. Colonel L. Wilson: Does the right hon. gentleman consider it quite fair to private firms who pay income tax that a Government subsidy should be given to societies working in opposition to them, and will he take into consideration that these societies, registered under the Friendly Societies Act, do not pay income tax as private firms do? Sir R. Winfrey: I said the subsidy of the Government was to the Agricultural Organisation Society, which is a purely propagandist society.

Publications Received. ***Forty-eighth Annual Report of the Entomological Society of Ontario, 1917.*** Printed by order of the Legislative Assembly of Ontario. (Toronto: A. T. Wilgress.) Published by the Ontario Department of Agriculture.—Board of Agriculture and Fisheries Food Production Leaflets:—No. 54, ***The Cropping of Grass Land Broken Up for 1918 Harvest***; No. 55, ***Methods of Obtaining Strong Stocks of Bees for Over-wintering***; No. 58, ***Silver Leaf Disease in Fruit Trees.***

BEGONIA EVANSIANA.

The now popular genus Begonia was first made known to gardeners in this country by the introduction from China in 1804 of B. Evansiana. The first record of it is in Aiton's *Hortus Kewensis*, where it is named B. discolor, and is said to have been introduced by the Hon. Court of Directors of the East India Company. A good illustration of it was given in the *Botanical Magazine*, t. 1,473 (1812), and it is there described as a highly ornamental stove plant, easily propagated by cuttings, or by the bulbils produced in the axils of the leaves; also that it is in flower for most part of the summer. Although not a common plant in greenhouses today this Begonia still occupies a place among garden plants, and that it still deserves to be called highly ornamental was shown by a group of well grown plants of it in flower in Greenhouse No. 4 at Kew this autumn, where they were an attraction for about two months. The plants (see fig. 32) were about 18 inches high, well branched, the leaves green above, the veins on the underside crimson, and the flowers rose-pink. The rootstock is tuberous and perennial, the stems knotted and annual, and the axillary bulbils fall off and start growing in spring in the ashes under the stage in a cold house, where the plants are wintered dry. No plant is easier to grow, and none less likely to be lost. At Kew it is treated as a greenhouse plant, and is quite happy. If a cross could be raised between this and the summer flowering tuberous Begonias the hybrid would have a distinct value. B. Evansiana is the most ornamental of the few species of the genus found in China.

FIG. 32.—BEGONIA EVANSIANA: FLOWERS PINK.

HOME CORRESPONDENCE.

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

"Rogues" among Potatos.—Mr. Sutton's last letter refers to an earlier test of what I thought might be a "sport," and says it was identified as White Beauty of Hebron. I may state that Mr. Sutton wrote me on December 4, 1905. The Potato proved to be White Beauty of Hebron, or Puritan. The next year I grew the three side by side; their foliage was much alike, but the tubers of the tested one took such extraordinary shapes as to baffle comparison. Since then I have grown rows of Potatos from seeds, bought of Messrs. Webb and Sons, and some of the seedlings grew in the same fantastic way. Singularly enough, nearly all the conditions Mr. Sutton names are reasonably complied with in the Potato "sport" I still possess. For instance, in 1904 my garden was made in land which had been, for many generations, an open freemen's common; in 1905 the "sport" appeared, and I am satisfied the other conditions are fairly well met. However, I have a number of the tubers now, in a box, to sprout for next year's planting, and I shall be quite willing to submit them to any further test, should such be desired. The tests were to ascertain whether it was a "sport" or not, and at my special request they were kindly continued a year longer than Messrs. Sutton desired, with this object in view; it was not for commercial value. On referring to the articles in your back volumes, and which Darwin named, I am able to say that, as I had confidently expected, every sentence of Darwin is fully borne out in the plain sense in which he wrote. He says: "A single bud or eye sometimes varies and produces a new variety, or occasionally—and this is a much more remarkable circumstance—all the eyes in a tuber vary in the same manner and at the same time, so that the whole tuber assumes a new character." Mr. Sutton's view is entirely the opposite of this. As to Kemp's Potato, the reference (1841) is: "A plant was dug up having two white tubers, the colour of the variety, and two others, which were red. Considering this to be something out of the common way, a gentleman took the plant, with the tubers still attached to it, to Mr. John Taylor, a highly respectable nurseryman at Preston. Mr. Taylor wisely preserved them and planted them the following spring, when he found the produce was red, and not only were they of a different colour, but they were, on comparative trials, found to be more productive, and, if anything, superior in quality, to the variety from which they sprouted. This variety is now well known throughout the kingdom, I believe, under the name of Taylor's Perfected." *John Tuardley.*"

And yet Mr. Sutton maintains that Darwin referred "exclusively to colour variation." Also, when Darwin states, "It is an argument of the greatest weight that when varieties are produced by simple bud-variation, they frequently present new characters," I consider it plain, with such cases before him, he cannot mean change of colour only, and it would be well for growers to act upon the opinion of such an eminent authority. "Bud variation" is his term for gardeners' common word, "sport." As to the causes of "sports" in plants, we really know nothing; all we know is that they exist. As to eyes of Potatos being cut out and inserted in others, to which Mr. Sutton refers, Darwin says, Chap. XI., p. 421, of the same book the Potatos produced by graft-hybrids "were of all colours and shapes, some very ugly and some very handsome," and "some of these varieties have been found valuable and have been extensively propagated." There is much more of the same kind. The truth appears to be that some "sports" are, like the cross fertilisations of the flowers, inferior to their predecessors, some as good, and others better. Considering the great value of the Potato, of which the war has furnished such an object-lesson, truth should be taken advantage of by testing future "sports," not treating all as "rogues," to be destroyed. This was the purpose I had in view in initiating the present friendly correspondence. I welcome Mr. Taylor's letter as helping to give light on this object.—*S. Judson.*

American Blight. Mr. John Bates asks (p. 180) whether certain varieties of Apples are immune from this pest. It is to be hoped that there will be numerous replies to this question, for a reliable list of immune varieties would be valuable. Possibly none is absolutely immune, and it is quite likely that a variety that escapes in one district is badly attacked in another, but there is no doubt that the pest very much prefers some sorts. In my oldest orchard the trouble has spread seriously, particularly on Cox's Orange Pippin, Beauty of Bath, and Allington Pippin, but I find that it has missed Lord Grosvenor, Lane's Prince Albert, Royal Jubilee, Worcester Pearmain, Blenheim Pippin, and Gladstone. I do not remember to have seen it on Bramley's Seedling, except where this variety is used for top-grafting. When removing the wax from top-grafted trees this year I found American Blight on nearly every junction, though how the insects got under the wax is a mystery.—*Market Grower.*

Fasciation not Inherent. Mr. H. G. King's letter regarding a fasciated Vegetable Marrow in your issue of 12th ult., p. 147, is very interesting, but after having experimented on several heads of Wheat, of which the one illustrated in fig. 85 is an example, I fear that he will find the Marrows will revert to the ordinary type next year. I have saved the seed from several "double" Wheat heads similar to the one in the illustration, but in all cases the progeny reverted to the usual type, showing that fasciation is a physical and not an inherent property.—*T. E. Vida, Winscombe, Cross Lane, Latchford Without, near Warrington, Cheshire.*

FIG. 85.—EAR OF WHEAT HEAD.

Silver Leaf Disease. The Food Production Department and various correspondents in the *Gardeners' Chronicle* have recently called to draw the attention of fruit growers to the danger of Silver Leaf disease, which is increasing to an alarming extent, especially on Plum trees. I am however at a loss to know why the Food Production Department does not offer suggestions or methods of dealing with affected trees beyond cutting out the diseased wood. I am induced to ask with this Department's resources for scientific research that a cure for trees that are attacked by the cutting away of a branch once or twice check the disease, if the constitution of the tree is the direct cause of the trouble. I should like to know the cause of any tree that, apparently healthy on the surface, a few days afterwards show signs of disease, and I should like to know why Silver Leaf disease has the best known to exist before. Surely there is a reason for attacks of this. We read of the ravages of the Potato disease, which, after one of the crops had been destroyed, it was known that the following crop would be attacked, and I think it is time that the Food Production Department took up the matter. Mr. Hay, speaking at the meeting of fruit growers on the 13th inst., said that trees grown on their own roots were more liable to the disease than those grown on the Crab stock. I too think that trees grown on their own roots are not nearly so liable to the disease as those grown on the Crab stock, but I have had many trees grown on the latter conditions. My experience with Apple trees leads me to state that any other method of fruit production beyond grafting or budding gives poor results. I have two trees of Apple Mank's Codlin thirty years old growing on their own roots, and I would not like to increase the number. In Mr. Hayward's remarks on planting one would infer that he thinks the trouble may be owing to soil or wrong cultural conditions. I wonder what his views are in that respect, or does he agree with the oft-expressed notion that the spores of the disease are floating in the air ready to take advantage of any abrasion of the bark caused by careless pruning or other mistakes on the part of the grower, or by cattle?—*E. Molyneux.*

The Loss of the Clematis in Gardens (see p. 165).—Mr. Robinson deserves the thanks of all lovers of the Clematis for drawing attention to the wholesale destruction of those graceful plants by the folly of grafting. When I was a lad we layered the plants in 4-inch pots under glass, and hardened them off when they were well rooted. Since then I have planted many grafted plants, but had no success with them. I have grafted Muscat Grapes on to the Foster's Seedling, but who would graft Grape vines for sale? Even certain Roses do better on their own roots than cuttings.—*J. P.*

SOCIETIES.

ROYAL HORTICULTURAL.

NOVEMBER 19.—There was a very pleasing and interesting display at this November meeting, held at the London Scottish Drill Hall. The exhibition was by no means a large one, but it included Chrysanthemums, Orchids, fruits and vegetables, Ferns, winter-flowering Begonias, and bottled fruits and vegetables. These last were from the Food Production Department, and merited the Gold Medal awarded. A similar high award was made to the Ryecroft display of Chrysanthemums.

The Floral Committee awarded one gold and two other medals, one First-class Certificate, and two Awards of Merit. The Fruit and Vegetable Committee awarded three medals, including a gold one, and confirmed awards made to Brussels Sprouts at Wisley. The Orchid Committee granted two medals, one First-class Certificate and one Award of Merit. The Hall was very cold and the attendance poor. Mr. Godsall lectured on "The Care of the Soil" at 3 p.m.

Floral Committee.

Present: Messrs. H. B. May (in the chair), W. J. Bean, E. A. Bowles, S. Morris, John Green, Geo. Harrow, John Heal, W. Howe, J. Jennings, C. B. Fielder, J. F. McLeod, Thos. Stevenson, Chas. Dixon, John Dickson, E. F. Hazelton, W. P. Thomson, E. H. Jenkins, Chas. E. Pearson, and A. G. Jackman.

FIRST-CLASS CERTIFICATE.

Pyracantha Gibbsii.—A large branch of this handsome shrub was shown and generally admired. The branching is horizontal and the branchlets and twigs crowded with small scarlet fruits of a deeper shade than those of the popular *P. Crenulata*. The leaves are about 2½ to 3 inches long and half an inch wide, oblong-lanceolate and of a deep shining green colour. A flowering branch was illustrated in *Gard. Chron.*, December 3, 1904, p. 134. Shown from the Superintendent's Gardens, Wisley.

AWARDS OF MERIT.

CHRYSANTHEMUMS.

Lyric Reflection.—A bright yellow single variety of the largest size. There are two rows of large florets, and the form is first-class. A bold and effective flower.

Cornfield Glory.—A handsome late Japanese sort of the incurved style, described on p. 291, and shown in very good form. Both shown by Mr. Norman Davis.

The most brilliant exhibit was one of Chrysanthemums arranged by Mr. H. J. Jones, Lewisham, this occupying a table half the length of the hall and included nine large stands of blooms in a setting of specimen flowers and

small vases of decorative varieties. Outstanding varieties were Brilliant, a vivid crimson Japanese variety that is well named; Marshal Foch, a new and large pale yellow form; Sunset, an orange fawn decorative variety; Mr. D. Lloyd George, crimson; and such useful singles as Bronze Beauty, Golden Spray, Supreme, Buttercup, Peace, Cooper, and the big yellow Isobel Felton. Cultural Medal.

Among several new Chrysanthemums from Mr. NORMAN DAVIS his Enamelled Glory was a better form and colour than when it gained a First-class Certificate from the National Chrysanthemum Society (see p. 141). Messrs. GODFREY AND SON had a showy bronze sport from the sauge Molly Godfrey, and a very bright chestnut sport and good single named Reginald Godfrey. Bronze Banksian Medal.

Messrs. H. B. MAY AND SON exhibited Ferns, winter-flowering Begonias, and Cyclamens. Silver Flora Medal.

Orchid Committee.

Present: Sir Jeremiah Colman, Bart., in the chair; Sir Harry J. Veitch, Messrs. Jas. O'Brien (hon. secretary), R. A. Rolfe, Arthur Dye, W. Bolton, R. Brooman-White, Chas. H. Curtis, Fred. Sander, C. J. Lucas, T. Armstrong, E. R. Ashton, Pantia Ralli, Frederick J. Hanbury, W. J. Kaye, and J. Wilson Potter.

AWARDS

FIRST-CLASS CERTIFICATE.

Sophro-Laelio-Cattleya Warscewiczoides × *S.-L.-C. aesculapius* var. *Olivia*.—*L.-C. Gottoiana* × *C. Schilleriana*, from C. J. Lucas, Esq., Wavertree Court, Heathfield, Sussex. Mr. Duncan's splendid hybrid the first flower of which was fully described in *Gard. Chron.*, November 2, 1918, p. 175. The plant was shown with a second bloom developed from the same inflorescence; the flower, which was inferior to the one described on p. 175, was of an intense vinous-purple tint, the fine ruby crimson with an orange-coloured base. It is one of the best of hybrids having Sophronitis grandiflora as one of its ancestors.

AWARD OF MERIT.

Laelio-Cattleya × *St. George var. Illawarra* × *Peetersii* × *L.-C.* × *St. Gothardi*, from Messrs. CHARLESWORTH AND CO. Has vivid bluish-lilac sepals and petals of dark rosy-mauve, with a golden flush; the lip crimson-purple with yellow lines at the base.

PRELIMINARY COMMENDATION.

Odontioda Morsiana × *Odontioda Bradshawiae* × *Odontioda Charlesworthii*, from Messrs. CHARLESWORTH AND CO. A desirable step towards producing Odontiodas equal in size and form to Odontoglossums, but with the characters inherited through Cochlioda Noezliana. The segments of the finely formed flower are almost covered with the clustered blotches of dull red-purple on the white ground tones.

× *Odontioglossum Memoria Crawshay* × *Hunnewellianum*, from Messrs. CHARLESWORTH AND CO. A grand flower with rich claret blotching on white ground, the colour extending through the segments and appearing bright-y on the reverse side.

CULTURAL COMMENDATION.

To Mr. J. COLLIER, gardener to Sir Jeremiah Colman, Bart., Gatton Park, Surrey, for a fine plant of Cattleya Portia coerulea (Bowringiana violacea × labiata coerulea), with a spike of nine flowers, in which the pale blue tint of the parents is perpetuated.

OTHER EXHIBITS.

Sir JEREMIAH COLMAN, Bart., showed another plant from the batch of Brasso-Laelio-Cattleya Antoinette, the fine example of which, without much evidence of Brassavola, gained a First-class Certificate at the last meeting. The plant now shown offered distinct evidence of its Brasso-Laelia parent. This exhibition also showed the pretty yellow Cattleya Drapsiana Golden Glory (Mrs. Pitt × Dowiana aurea-Statterana).

R. WINDSOR RICKARDS, Esq., Tsé Priory, Monmouthshire, sent a pretty flower of the original form of Sophro-Laelio-Cattleya Isabella (C. Fabia × S.-L.-C. Marathon), with salmon-coloured sepals and petals, faintly shaded with apricot-yellow, and a ruby-purple lip with yellow lines from the base.

Mr. ALBERT FISHER, Winchmore Hill, showed Cypripedium Florence Fisher (Gracosa × insigne Rochdale Hall), resembling a small C. Rolfeae, the flower having a white ground and dark purple markings.

Messrs. CHARLESWORTH AND CO. were awarded a Silver-gilt Flora Medal for an extensive group of hybrid Cattleyas, Laelio-Cattleyas, Odonto Gossums, and Odontiodas. Remarkable among the home-raised seedlings was the handsome *O. crispum* var. *L. memoria* with large, well-formed flowers, evenly blotched with claret-red. The group was rendered specially interesting by the presence of a number of late species, including the scarlet *Habenaria Rochelenii*, Burgoyne's Medusae, *Bestopea senatia*, and Pescatorei's *Rossioglossum*. The rare *Disa Ithia* was there in handsome flowers equal to those of *D. grandiflora*, was added to the collection.

Messrs. ARMSTRONG AND BROWN, Orchidists, Tunbridge Wells, were awarded a Silver Flora Medal for a group of home-raised Cattleyas, Laelio-Cattleyas, and Odontoglossums, among which Odm. Ainsworth Orchidhurst 'variety Lambeauianum' crispum was a very fine flower, partaking largely of *O. crispum*; it is white with two irregular oblong reddish blotches in the middle of the petals. Some seedlings flowering for the first time showed good and distinct floral features. Forms of the white Cattleya Saturn and a rich crimson Odontiola Cooksonia were also included in this group.

Fruit and Vegetable Committee

Present: Messrs. Joseph Cheal, in the chair; G. P. Berry, E. Hobbs, H. Markham, F. Perkins, P. Ecckett, A. Allen, E. Beckett, Owen Thomas, E. A. Bunyard, W. Bates, A. Bullock, and the Rev. W. Wilks.

A splendid and educational exhibit of fruits and vegetables, with Mr. Vincent Banks in charge, gave some idea of the work done in this important branch of horticulture by the Food Production Department. Needless to say, Mr. Banks' corner is of the highest excellence, and no food product of vegetable seems to be beyond his skill to present in an attractive and appetising form. There were about 150 bottles staged and the contents appeared to be in first-rate condition.—Cheal Medal.

The contribution from the Women's School at Cocking, Glenside, Sussex, was undoubtedly the most remarkable of a number of the kind, and gave the public a good idea of the work being undertaken. A splendid collection from the school of Lettuces and Cauliflowers especially good. So were the Messrs. Lane Prince, Albert Bramley's Seedling, Cox's Orange Pippin, Peasgood's Nonsuch, Allington Pippin, Lord Derby, and Newton Wonder Apples; the Pears and those sent by Chrysanthemums and Carnations, made up a very bright display. A silver-gilt Knightian Medal was awarded to Mrs. E. Mere for a collection of vegetables and cooked specimens.—Banksian Medal.

Mr. R. STEWARD, Parsfanger Gardens, Herts, exhibited seven varieties of Brussel Sprouts, three plants of each; the sorts were The Duchington, Soldato, Dwarf Gem, Dread nought, Matchless, Liberton, and St. Foin. Soldato bore very large, fine, very fine sprouts.—Silver Banksian Medal. From the R.H.S. Gardens nine dishes of picked Brussels Sprouts were brought, and awards made at the Wisley trials were confirmed, viz., Award of Merit to Dundee (BARR AND SONS), and Favourite (ARTHOGSTAIL). Highly Commended to Dalkeith (SCARFF), Rosny (BARR AND SONS), and Hollow Exhibition (CARTER AND CO.). Commended (not to Perfection (E. W. KING), Darlington (SCARFF), Aylburth Giant (R. VEITCH AND SON), and King of the Market (BARR AND SONS).

Three fine specimens of fruits of Diospyros Kaki were placed on the Committee table, but there was no evidence of ownership.

NATIONAL CHRYSANTHEMUM.

NOVEMBER 13.—The Floral Committee met at Essex Hall, Strand, at 5 p.m. on the above date. There was a fair attendance, and a number of novelties came before the Committee. No Certificate was awarded, but the three following varieties received commendation:

Lizzie Edwardson.—A large yellow single variety, described in our R.H.S. report (p. 210).

Orange Decorative.—This is a large decorative single variety, with blooms 4½ inches across and with the loose, elegant appearance of a small-sized Japanese variety. The colour is light orange-fawn or apricot, with a narrow yellow zone round the eye. These two varieties were shown by Mr. NORMAN DAVIS, Fairfield.

Raymond Dyer.—A brilliantly attractive and striking single variety, and one that produces its tasselled flowers in elegant sprays. The colour is rich, shining, chestnut-red, with a narrow yellow zone around the eye. Shown by Mr. G. STORNEY, Exeter Road, Bournemouth.

After the meeting of the Floral Committee, a sub-committee met and laid plans for the drafting of selections of early-flowering Chrysanthemums and for trials of selected varieties.

At 6 p.m. Mr. Thos. Bevan presided over a meeting of the Executive Committee at the offices of the British Florists' Federation, Covent Garden. Two new members were elected, and the financial statement showed a balance at the time of £57. Prize monies amounting to £46 9s. were passed for payment. The reserve fund is still intact. At the close of formal business, the secretary started a discussion on "Reconstruction." This was carried on briskly for about three-quarters of an hour; many useful suggestions were made, and these will come up for fuller consideration at the next meeting.

SCOTTISH HORTICULTURAL.

OWING to the changes brought about by the war, and to the much more important position which home-grown food plants now occupy in our national economy as compared with pre-war times, it has been decided to replace the Chrysanthemum Exhibition and Winter Flower, Fruit and Vegetable Show which the Scottish Horticultural Association successfully conducted for thirty years by a great Potato Exhibition. Provided the state of the country will permit of its being held, it is proposed to hold this Exhibition in Edinburgh in the autumn of 1919, and should it prove a success, as it is confidently anticipated it will, the intention is to continue it annually thereafter. The arrangements are not yet completed, but a guarantee fund has been formed, a substantial sum has already been promised for prizes, and the prize list is in course of preparation.

UNITED HORTICULTURAL BENEFIT AND PROVIDENT.

THE monthly meeting of this society was held at the Royal Horticultural Hall on Monday, the 11th inst., Mr. C. H. Curtis presiding.

Before commencing the general business a vote of condolence was passed to the widow of the late Mr. E. J. Allard. The Army Forms relating to the death of the late Pte. F. W. Rogers, V.A.W.A.C., J. Haxhurst, J. W. Nye, and R. Daniels were received, also the death certificates of two other members, and the sum of £105 7s. 6d. was passed for payment to their respective nominees. One member was allowed to withdraw double the amount of his interest, and one member was assisted from the Distress Fund. The sick pay for October on the private side amounted to £61 18s., and on the State side to £53 10s. 6d.

TRADE NOTES.

CHAMBER OF HORTICULTURE.

REPRESENTATIVES of non-trading societies did not turn up in large numbers to the meeting at Dominion House, Norfolk Street, Strand, on Tuesday last, at 2.30 p.m. Chief interest centred in the amount of annual subscription the non-trading societies, such as the various floricultural societies dealing with one special kind of flower, and horticultural societies, should pay if they attached themselves to the Chamber. It was pointed out that most of these societies had suffered severely by depletion of membership and funds during the war, and would need a year or two to recover. This position led to the final agreement that such bodies should pay a maximum annual subscription of two guineas for the next two years, the smaller societies to pay only one guinea, but at the end of 1920 these annual subscriptions should be subject to revision.

ORANGES AND LEMONS.

ON the 18th inst. the Food Controller took under control all the stocks of Oranges and Lemons in the country, and those yet to be

imported. The Covent Garden dealers are resenting control now that hostilities have ceased, and they desire freedom of action. The London dealers, at a meeting held at the Connaught Rooms, passed resolutions calling for the suspension of all Orders concerning the distribution of fruits and vegetables; the withdrawal of the Oranges and Lemons Order; and the removal of the embargo on imports of Apples and other fruits and vegetables. Curiously enough the fruit buyers of Liverpool have pledged themselves to carry out the Oranges and Lemons Order, and disagreed with the London dealers, but the latter protest against the monopoly of Oranges and Lemons which they consider exists in the saleerooms at Liverpool and Manchester.

POTATO ORDER OF 1918.

At the mass meeting of the National Federation of Retail Fruiterers, the London and Provincial Fruit Buyers' Association, and the London and Home Counties Retail Fruiterers' Association, held under the presidency of Sir A. Yeo, at the Connaught Rooms on the 13th inst., a resolution was carried protesting against the Potato Order of 1918, insisting upon the margin of profit as laid down by the trade as a minimum, upon the receipt of 112lb. net of sound, saleable, reliable Potatos to the cwt., and the return of all waste; and demanding the presence upon the Market Distribution Committee of elected representatives of the retailers, with an addendum that all retailers should refuse to sell Potatos unless a living profit were allowed.

CROPS AND STOCK ON THE HOME FARM.

HOUSING CATTLE

Now that pastures are very wet the time has come when the milking cows will be better under cover during the cold nights which will continue for some time to come. Jersey and Guernsey breeds should certainly be housed, but the Shorthorn and various other hardy breeds need not be housed yet, provided the pastures are dry and well sheltered by hedges or other wind breaks, and the weather is reasonably warm for the time of year. Some cowkeepers prefer to leave their Shorthorn cows out of doors all the year round, simply bringing them in for milking only; indeed, many do not even put the cows under cover for calving, but house them for a few days after calving. In this connection everything depends on local custom and conditions.

In my mind there is no doubt whatever as to the wisdom of placing under cover the more tender breeds, commencing with the calves, and following with yearlings, and finally the cows, about the middle of the present month. Some cowkeepers do not allow their cows out in the fields after November, but allow them to run in an open, dry yard for exercise, and feed them entirely with artificial food. I am inclined to believe this is a good plan. Cows turned out during a showery, cold day in December gather in the most sheltered part of the field, where they invariably stand shivering in the cold, and do not attempt to feed. Under such circumstances they cannot be producing a plentiful contribution of milk, whereas if they had the protection of a shed in an open yard, where they could be fed with hay, Oat straw, and Cabbage, with an ample water supply, and obtain exercise for a few hours, the result would more than justify the treatment, and the cows would be less liable to ailments, such as tuberculosis or milk fever.

For the young stock an open yard with a shed having a southern aspect is ideal. Here they obtain air, sunshine and exercise. Fed with Cabbage (not frozen), Mangold, Turnips, rough hay, and sweet Oat Straw, and if possible at least 2 lbs. each of cotton-cake per day, they thrive, and come out in April in strong, healthy condition. An ample water supply is important.

During the winter a substantial ration is an advantage for dairy cows, as it assists them to produce a maximum quantity of milk of high quality. There are those who do not believe in the artificial feeding of cows; they say the food a cow procures naturally, i.e., grass and hay, is sufficient to give good results, but surely a cow fed extra well should give a corresponding return in milk, both as regards quantity and quality. The cream must be richer when extra food rations are provided than from the ordinary grass feed, especially as grass is generally soft and watery in winter time. Good meadow hay, rich in herbage, is a great stand-by for milk cows. The better the quality the higher the returns. Some farmers chaff the hay and mix it with whatever roots are used, but I prefer long hay as giving more employment to the animals, and less liable to cause indigestion, because when chaffed, with roots, the cows are apt to eat hurriedly. I give 6 lbs. at the morning meal while milking, and 10 lbs. at night; 15 lbs. of cut Mangold at each of the two feeds, with 5 lbs. of Cabbage added. Bibby's dairy cake is given at the rate of 2 lbs. per cow at the end of the day, previous to milking.

PIGS

There is a good prospect of obtaining more cereal food for pigs. I am hoping to see the Barley that is too poor for malt or seed released for grinding, and now that Barley is not used with Wheat flour there is hope for the pigs. Pigs should not be neglected, as no other bacon is superior to English grown, fed, and cured.

At a time when many persons are reducing their stock of pigs, I like to increase mine. Much is heard about the extremely low prices of store pigs, but there may be two sides to that subject. In the open market last month I sold eleven week old stores at 42s. each; close by other stores sold at 6s. each. There are pigs *and* pigs. Meal from home grown Barley mixed with boiled small Potatoes is quite the best food for putting on good flesh in pigs, either for pork or bacon. If separated milk can also be added so much the better, but the food should not be made too sloppy. Breeding sows and growing store pigs should have plenty of exercise; my sows have the run of a pasture field all day, and lie in an open, dry shed at night, with plenty of warm, dry straw, and they succeed well. Many farmers assert that if the boar continuously runs with the sows the results are not so good as when the sexes are separated; that is not my experience, and I get an average of ten pigs to a litter from my Large White Yorkshire sows and Middle White boar. This is quite one of the best of the crosses. *E. Molyneux.*

Obituary.

Robertha Henrietta Anderson. Lovers of hardy plants throughout the entire world learn with deep regret of the decease of Miss R. H. Anderson, on Thursday, October 31, at Braikenskimming, Mauchline, Ayrshire. Familiarly known amongst her friends as "Miss Bertha," Miss Anderson made gardening her hobby, and by her example and influence did much to further the cultivation of hardy plants. From a simple utilitarian garden of a type common to country houses, she evolved one which was a joy to herself and a delight to her friends. The garden was pleasantly situated on the high bank of the River Ayr, with broad green walks where soft the footsteps fall. While not interfering with the natural lines of the situation, not forgetful of the requirements of the household in the matter of fruits and vegetables, the borders were filled with hardy herbaceous plants, dwarf shrubs, both deciduous and evergreen, and Roses, all arranged in an unconventional but orderly manner, so that through out the year there was always something of interest to be seen. Broad-minded and catholic in her tastes, Miss Bertha gathered together a wonderful collection of hardy plants, many somewhat rare, and also tested most of the newer introductions, all of which did not justify their claims to permanency. During the war, when her male assistants were called to military service, she worked industriously to keep her garden in order, and it is feared she may have overtaxed her strength, forgetting she had passed three score and ten, as during the past summer it was evident that she was failing in vigour, and latterly was unable to walk to her beloved garden. She is laid to rest in the churchyard of Stair, in which parish Barskimming is situated. Along with a host of other plant lovers I mourn the loss of a kind hearted lady whose friendship will remain as a happy memory, while the warmest sympathy of all is extended to the three ladies who have lost a revered and dear sister. *Jas. Whitton.*

Answers to Correspondents.

DAMAGE TO LOGANBERRY CANES: *G. M.* We find no trace of fungous or insect pests on the canes submitted. The injury appears to be due to the action of some corrosive liquid, or most probably to the intense heat produced by a garden fire burning in close proximity to the Loganberries. The distance to which the flames and fierce heat of bonfires may be carried by wind is not always fully appreciated in gardens, and unexpected damage frequently occurs as a consequence.

FIG TREES. *R. L. B.* Your statement that the trees grow freely points to the roots having received too much moisture, or too stimulating manure. It would be advisable to dig down—say for 3 feet, and ascertain the condition of the border. Figs are gross feeders, and often grow too vigorously. When the new shoots are 1 foot in length, and the second crop of fruit is showing, it is well to pinch out the points of the shoots, and thus help the Figs to swell. Should it be found that the soil at 3 feet deep is too wet, provide a drain to keep the border drier. Do not allow the shoots to be crowded; rather thin them freely to allow the sunlight to enter the tree. The Fig is a sun-loving plant, and needs plenty of warmth.

PEARS FOR ARCHES: *J. E. F.* Pyramid trees would not yield such quick returns as cordons. Well-grown pyramids are very ornamental trees, and in ten years they would no doubt be very attractive, and equally as useful. The weeping form of pyramid is much the best style to plant, i.e., as the tree grows the lateral shoots should be depressed, and in this way the main stem will swell up more freely, whilst the sap will be more equally distributed amongst the branches. In nearly every instance the Quince stock is to be preferred to the Pear stock. Cordons, on the contrary, will yield quicker returns and produce good crops of excellent quality. They may be trained over arches or on walls of moderate height. If trained over arches plenty of room should be allowed. The growth is more simple in the case of cordons and their management in other respects easier. The following list comprises some of the best dessert varieties: Williams' Bon Chrétien, Marguerite Marillat, Louise Bonne of Jersey, Triomphe de Vienne, Thompson's, Beurré Superfin, Conference, Doyenne du Comice, Beurre Dumont, Emile d'Heyst, Marie Louise, Fondante de Thirriot, Gros Morceau, President Barabe, Josephine de Malines, Nouvelle Fulvie, Easter Beurré, Marie Benoist, and, where it thrives, Beurré Bance. The names are given in the order of ripening, and the varieties should succeed in almost all kinds of soil.

SEEDLING SINGLE CHRYSANTHEMUM: *J. L.* The flowers arrived in very poor condition, therefore it would not be fair to express an opinion of the merits of the variety. The colour is pleasing, but the flowers appear to be too thin in texture for market purposes, although they may be very useful in a private establishment where they could be placed in water as soon as cut.

TWELVE BEST HERBACEOUS PLANTS FOR CUT FLOWERS: *J. B.* It is very difficult to say which are the twelve best herbaceous plants for providing cut blooms, and no two persons would be likely to agree on the subject. The following should give a good variety: Lily of the Valley, Iris in variety, Montbretias, single herbaceous Paeonies, Pyrethrums in variety, single and double long-spurred Aquilegias, Chrysanthemum maximum in variety, Erygium planum, Gypsophila paniculata, and the double variety, Helenium Riverton Gem, Papaver nudicaule, and Michaelmas Daisies in variety.

Communications Received.—J. W.—J. T. R.—M. E. B.—C. T.—P. H.—G. T.—H. E.—W. S. S.—R. W. T.—W. R.—T. E. P.—Capt. L.—W. D. & Sons—A. G. N.—G. B.—C. J.—A. D. R.—F. W. C.—S. L. B.—S. A.—J. S. & Son—C. P.—A. O.—J. O.—R. R.—S. W. W.—J. H. J.—D. W.—T. E. T.—G. E.

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ILLUSTRATIONS.

SOME OF THE NEWER ROSES.

LIVING, as I do, in North Lincolnshire with strong soil to grow my Roses in, but with an accompaniment of wet mists and strong winds, I think success here is a strong proof of good constitution in any variety. I have received buds from one of the greatest raisers of Roses in the British Isles, with the request that I would test the varieties in my soil, as I admit. As many readers of the *Gardeners' Chronicle* may also have severe climates to deal with, my experiences, and I have been a Rose grower for half a century, may be useful to them. I propose limiting my remarks to Roses introduced during the past six years, though I may refer to one or two earlier sorts which have done exceptionally well or exceptionally badly here. Starting with the year 1912 there are no Hybrid Perpetual varieties of that year to comment upon.

HYBRID TEA ROSES INTRODUCED IN 1912.

BRITISH QUEEN (McGredy).—A very fine Rose when at its best, a fuller and even more perfect Mrs. Herbert Stevens, but lacking strength of stalk, and here much better on half standards than as a dwarf. My first plants seemed bad growers, but time has improved them in this respect. Very free.

DUCHESS OF SUTHERLAND (A. Dickson).—A fine large Rose, and a good grower. Colour rosy pink, shaded lemon and white.

EARL OF GOSFORD (McGredy).—A good grower, and at its best a very fine Rose; not very free, and the proportion of good blooms not very high. The colour is almost that of Victor Hugo, but it is not so fine in shape.

GEOFFREY HENSLOW (A. Dickson).—A bright orange red variety; a fine flower, but not very free here.

GEORGE DICKSON (A. Dickson).—Undoubtedly the finest dark Rose we have, possibly some relation to Earl of Dufferin. The blooms are large, of good shape, fragrant, and a fine colour. The variety has two faults; it hangs its head owing to the weight and great size of its blooms, and it sometimes gives divided flowers.

KING GEORGE V. (Hugh Dickson).—A fine variety, coloured blackish crimson, and a shade which does not burn in the sun. A good grower, full, and very nearly an exceptionally fine Rose.

LOUISE CATHERINE BRISTAU (Pernet Ducher).—A very lovely coloured variety; a garden Rose, a good grower, free, and most distinct. Coral red, shaded yellow, seems to describe the colour best. Highly recommended.

MME. CHARLES LUTAUD (Pernet-Ducher).—A fairly free, vigorous, yellow Rose, said to be an improved Marquise de Sinety, but here it has not much resemblance to that variety. A better grower, but lacking the fine colour of Marquise de Sinety, and here I have better blooms of the older Rose, though the latter is rather a "stumpy" grower.

MRS. RICHARD DRAPER (Hugh Dickson).—This has the style of La France, but is fuller, and a fine show Rose when at its best.

MRS. SAM ROSS (Hugh Dickson).—A very lovely pale yellow Rose, but only a moderate grower here, otherwise it is a good all-round variety.

MRS. WALLACE ROWE (McGredy).—A very good pink variety, fine in shape, and full; not "Sweet Pea mauve." A rather thick, short grower.

OPHELIA (W. Paul).—A first-rate Rose of good shape, colour, and growth; salmon flesh colour, at times almost yellow towards the centre, not too full, but a fine garden Rose.

ST. HELENA (E. Cants).—A very creamy coloured Rose, generally with a pink tinge in the centre; fine shape, full, and a fine grower.

SUNBURST (Pernet Ducher).—A grand Rose when at its best, full, bold, of fine shape, deep cadmium yellow in colour; a good grower and free. Unfortunately it often comes very pale, even white, early in the season. Nevertheless it is worth growing in the most limited collection.

OTHER ROSES OF 1912.

MRS. HERBERT HAWKSWORTH (Alex. Dickson).—This Rose is by some classed as an H.P., but it is really a true Tea, and a good one. In the raiser's catalogue it is described as "delicate cerise on milk-white." Here it is deeper in colour, almost as yellow as Alex. Hill Gray. It is a good grower, with full, globular blooms, which last well.

RODHATE (Poulson).—A red Polyantha (dwarf), very free, and in its best colour very bright. It sometimes comes a duller shade.

CORONATION (Turner).—A bright crimson-scarlet Wichuraiana variety, streaked white. Free and good, though to my taste the white streaks are a considerable defect.

ETHEL (Turner).—A lovely pink Wichuraiana Rose, with good foliage, and excellent in every respect.

SILVER MOON (?).—A large and striking single Wichuraiana Rose, rather perhaps in the style of Una; silvery white; not so strong a grower, I think, as some.

SOPHIA (Weigand).—A fine red variety, with large trusses, not perhaps quite so strong a grower as some, but very good.

CLIMBING RICHMOND (A. Dickson).—A valuable striped H.T., much more free than Climbing Liberty. Flowers as in the dwarf form.

SWEET LAVENDER (Paul and Son).—A striking climber for those who like the colour. It is very distinct, and its golden stamens add to the effect.

ROSES INTRODUCED IN 1915.

CORONATION (Hugh Dickson).—A very large and fine flower, of a pale pink shade, sometimes deeper; a very vigorous grower; very striking. One of the few Hybrid Perpetuals to gain a Gold Medal in recent years.

The following are Hybrid Teas:—

CISSIE EASLEA (Pernet Ducher).—Saffron yellow, sometimes with rosy centre; a Rose of good size and shape, fairly full; a good grower, and a valuable garden variety.

DUCHESS OF NORMANDY (Le Cornu).—A sport from that grand Rose Dean Hole, and identical except that it is shaded with yellow on salmon flesh.

EDITH PART (McGredy).—A beautiful Rose, of medium size; excellent in growth and habit. The

FIG. 34.—HYBRID TEA ROSE QUEEN MARY: COLOUR OF FLOWER YELLOW, SHADED WITH CARMINE.

colour varies somewhat, usually salmon-yellow shaded rich red; quite distinct.

H. E. RICHARDSON (Hugh Dickson).—A richly coloured crimson Rose, and a good grower. Here it lacks size and does not give full blooms.

LADY MARY WARD (McGredy).—A lovely deep yellow Rose, free and striking, but it hangs its head, and is not very strong in constitution.

MARIE ADELAIDE (GRANDE DUCHESSE DE LUXEMBOURG (Soupert et Notting).—A very lovely Rose, deep yellow, and of beautiful shape; a fairly good grower and very free. Not very large.

MEVROUW DORA VAN TETS (Leenders).—Bright crimson, not full, and of medium size. A useful garden Rose.

MRS. ANDREW CARNEGIE (Cooper).—When I saw the blooms which won the Gold Medal in 1912 I thought them the finest white Roses I had ever seen. In 1913 it did not seem so good. I have seen two rows of this in a nursery one mass of fine blooms, yet it has not done well here so far. I suppose the climate or soil does not suit it, but I am still trying it.

QUEEN MARY (Alex. Dickson) (see fig. 84).—At first this Rose seemed rather like Juliet, but it is quite distinct; the colour is yellow, shaded carmine. It is very free, rather hangs its head; a fair grower only, but exceptionally beautiful.

WILLOWMERE (Pernet-Ducher).—A lovely shrimp-pink Rose, with yellow and deep pink shadings. In some ways an improved Lyon, and certainly more reliable in the garden. A good grower, free, large, and one of the best. Perhaps not quite so full as Lyon, but it has not the Lyon's eccentricities.

Other Roses of 1913.

MAIL EDOUARD HERRIOT (*The Daily Mail* Rose) (Pernet-Ducher).—When this Pernetiana Rose first came out one of our greatest commercial Rose growers said it was "the best Rose anyone ever brought out!" The colour is remarkable, a bright prawn-red. The blooms are of good shape but not very full; a good grower, hardy, and with good foliage. Its great fault is that, although the blooms are not heavy, they

FIG. 83.—HT. ROSE MRS. CHARLES E. PEARSON. (SEE P. 213.)

almost always hang their heads. It is possible that the new Flame of Fire may be preferable.

GEORGE ELGER (Turbat).—The best yellow dwarf Polyantha; very free and good. An advance.

IRISH FIREFLAME (Alex. Dickson).—A splendid advance in colour among singles; a deeper orange and red Irish Elegance; very free and striking. Unsurpassed for table decoration.

MRS. M. H. WALSH (Walsh).—A grand pure white, double, climbing Wichuraiana, free, and fine in foliage; not so strong a grower but a great improvement in purity of colour on White Dorothy.

DANAE (Pemberton).—A yellow hybrid Rose, a continuous flowerer, and good generally, though not so strong a grower as the Wichuraianas.

MOONLIGHT (Pemberton).—Flowers lemon and white, with golden stamens; another free flowerer, of medium growth. *L. C. R. Norris-Elye, Utterby Manor, Louth, Lincolnshire.*

(To be continued.)

MRS. C. E. PEARSON (McGredy) (see fig. 83).—An extraordinarily beautiful Rose, somewhat after the colour of Lyon, but not so large; holds its head up well, fine shape, and free. Only a medium grower.

MRS. F. W. VANDERBILT (McGredy).—Almost my favourite Rose. In colour a mixture of orange, apricot and red; fine shape, free, of good size and vigorous. Its growth is apt to be lopsided, and this is almost its only fault.

MRS. R. D. MCCLURE (Hugh Dickson).—Another fine Rose; salmon-pink, of splendid shape, large; a good grower and good all-round.

MRS. T. HILLAS (Pernet-Ducher).—A good garden Rose, and at times fit for show purposes. Yellow, sometimes rather pale; a good grower and decidedly useful.

OLD GOLD (McGredy).—Almost a single Rose, but very lovely in the bud and when half opened. The colour is a rich mixture of orange, apricot and red. A good grower and very free. Splendid for cut flowers if taken early enough

CULTURAL NOTES

THE FORCING OF RHUBARB AND SEAKALE.

To obtain forced Rhubarb by Christmas the crowns need not be lifted, but a cask or large box should be turned upside down over them. Make a hole in the upper end for ventilation, and then surround the cask or box with a hot bed. This may consist of a mixture of manure and leaves or anything else that will ferment. The material should extend 3 or 4 feet beyond the cask, and it should be made into a firm heap about 4 feet in depth. The heat of fermentation will warm the soil about the roots, and the stems will grow freely and strongly. If two or three roots are covered every three weeks or so a constant supply will be maintained. Should the heat decline before growth is finished place a quantity of fresh manure around the cask; in frosty weather the whole may be covered with straw or Bracken. If the casks are left in position until the spring they will protect the crowns, the roots of which will grow afresh in summer and the plants show little indication of having been forced at such an unreasonable time.

Seakale may be had in December by treating it in the same manner as Rhubarb, or large pots may be placed over the crowns. This vegetable must be well blanched, and should always be forced in the dark, but the interior of the pots must be ventilated a little to prevent the growth decaying. For midwinter forcing lift the roots, place a number of them in a 10-inch or 12-inch pot, and plunge the pot in a hot bed in a Mushroomhouse or suitable pit. The earliest plants only should be lifted at present, and, as soon as the leaves have withered from the crowns the roots may be taken up and potted, and some of them may be put in now and again as the demand requires. The roots do not need much water when being forced. If the crowns are preserved after forcing they will be useful for purposes of propagation. *James A. Paice.*

BULB GARDEN.

CROCUS HYEMALIS.

CROCUS HYEMALIS, a delicate-looking species from the Near East derives much of its interest and value from the circumstance that it blooms in mid-winter, frequently in December and January. It is a charming plant for the sheltered, sunny rock garden, the front of the border, or for growing in pots in the cold or cool greenhouse. The flowers are of great beauty, for the white segments are lined with purple and the filaments are like gold wire. In the rare variety Foxii the anthers are black, and these add greatly to the fascinations of this form of the Winter-flowering Crocus.

The short days of mid winter, even when fine, are too sunless to induce the flowers to open unless in exceptionally fine weather, and it is always wise to give plants out-of-doors the protection of a hand-light or bell-glass from the time the buds appear until the flowers are over. Unless this is done the probabilities are that the somewhat thin flowers will be reduced to pulp in a short time, and without ever showing their great beauty.

C. hyemalis is a gem for the alpine house or cool or cold greenhouse. From six to twelve corms may be placed in each pot early in autumn about half-an-inch beneath the surface of the soil and plunged in a bed of ashes until about the end of October, when the plants may be taken indoors and grown in a cool, sunny position. Corms planted out-of-doors should be set about 1 inch deep.

I have found C. hyemalis hardy in ordinary seasons, but in exceptional winters the leaves are destroyed before the corms have fully ripened, and the glass protection suggested for the flowers is desirable for the foliage also in such seasons. *S. Arnott.*

TREES AND SHRUBS.

CASTANOPSIS CHRYSOPHYLLA VAR. OBOVATA.

CASTANOPSIS, a genus of about 25 species, all except one natives of warm countries in Eastern Asia, is known only in gardens by the one Western species, C. chrysophylla, the Golden-leaved Chestnut or Chinquapin, a native of California. According to Sir Joseph Hooker, Castanopsis is inseparable from Quercus by any constant character. The fruit of C. chrysophylla is, however, like that of the Chestnut. The tree is evergreen, the leaves lanceolate entire, green above, and coated below with golden-yellow, persistent scales. Sargent states that it grows to 100 feet or 150 feet in height in the humid coast valleys of Northern California, but is shrubby at high elevations. In this country, where it has been in cultivation about 75 years, it is more a shrub than a tree. Only this type was known until quite recently, when Messrs. T. Smith and Son, Newry, sent us a branch of what they called C. obovata (see fig. 56), which they said had appeared among a batch of plants raised from seeds imported from North America. The difference in habit and foliage from the type is remarkable, the plant being dwarf and spreading, and the leaves, as shown in the illustration, almost round. They are golden beneath. If this be a seminal sport from C. chrysophylla and there seems no reason to doubt that such is its origin, it is one of the most striking mutations that have been recorded. There is just the possibility that it is the result of chance pollination with some kind of Oak. It would be interesting to ascertain the exact source of the seeds from which the plant was raised in Messrs. Smith and Son's nursery. We are informed that plants of C. obovata are in cultivation at Edinburgh and Kew.

ASIATIC MOUNTAIN ASHES.

The Bulletin of Popular Information, No. 2, Vol. IV., issued by the Arnold Arboretum, contains the following interesting account of Asiatic Mountain Ashes grown in the Arboretum:

In recent years a number of these trees have been brought from eastern Asia to the Arboretum, and some of them promise to be valuable trees here. The Japanese Sorbus commixta was the first of them which was planted here, and it has now been growing in the Arboretum since 1892. There is a tall specimen of this species on the right hand side of the path leading to the Shrub Collection from the Forest Hills Gate. It has smaller flower-clusters than the European species, the bright red fruit is smaller, and its chief value is in the bright orange and red colour of the leaves in autumn. A much handsomer plant is Sorbus pekinensis, a native of northern China, which is now well established in the Arboretum. It is a slender tree with narrow leaflets, compact clusters of flowers and lustrous pink or yellowish fruit in drooping clusters. The colour of the fruit is unusual among Mountain Ashes. The narrow leaflets give this tree a particularly open and attractive appearance. There are a number of specimens in the Sorbus Collection in the new ground near the group of Swamp White Oaks on the Valley Road, but the largest and handsomest specimen in the Arboretum is in the nursery plantation near the top of Peter's Hill. Sorbus Koehneana has flowered and fruited in the Arboretum this year for the first time. It is a shrub now about 3 feet high with slender erect stems, small leaves with numerous narrow leaflets, small compact clusters of flowers, and snow white fruit. It is a beautiful shrub which when better known will become common in gardens. The plants in the Arboretum were raised from seeds collected by William Purdom in northern Shensi. Sorbus pohuashanensis, so named because it was discovered on the Pohua Mountains in northern China, is also well established in the Arboretum. The leaflets are rather broader than those of the Rowan tree, but it has the red fruit and woolly buds of that species and is not superior to it for general cultivation. Although they are not as large and shapely trees as some of the Old World species, the two Mountain Ashes of eastern North America, Sorbus americana and its variety decora, have no rivals in this group in the beauty of the great drooping clusters of orange fruit and in the orange and red tints of their autumn foliage. They are small trees or large shrubs, and are often planted in gardens in Canada, northern Michigan and Minnesota, but unfortunately are still little known in those of eastern Massachusetts.

SILVER LEAF DISEASE.

THE evidence that Silver Leaf is a fatal disease is now overwhelming. Trees once attacked are killed outright. The need of drastic measures in dealing with a malady that threatens to destroy all our Plum trees and

FIG. 56.—CASTANOPSIS CHRYSOPHYLLA VAR. OBOVATA.

which may spread to other fruits, such as Apples, Cherries, Pears and Apricots, is therefore pressing. The removal of affected branches does not arrest the progress of the disease, and the recommendation to save all diseased branches in the belief that trees can thereby be saved does not go far enough.

The compiler of the Board of Agriculture Leaflet No. 302, issued in 1915, had not then realised the deadliness of Silver Leaf. But in Leaflet No. 58, recently issued by the Food Production Department, its seriousness is recognised, and we are told that "unless drastic measures are taken to prevent its spread, one of the most valuable varieties of Plum, namely Victoria, is threatened with total extinction." But we are also told that "if the affected trees are systematically and energetically dealt with it is possible very largely to control the disease," and cutting out the silvered branches of trees otherwise healthy is recommended as a means of saving them. This has been tried again and again, but the trees have sooner or later been killed outright by the disease. Every tree therefore which develops the silvered foliage characteristic of this disease should be looked upon as stricken beyond recovery, and be destroyed at once.

The directions given in Leaflet No. 58 respecting the removal of branches had better not be heeded, and those for the removal of dead or dying trees be adopted for all affected trees. These directions are:—

"Dead or dying trees should be completely grubbed up. If it is quite impracticable to take such trees up by the roots they should be cut down close to the ground and the stump covered with at least 6 inches of soil. Exposed stumps on which the fungus can fructify should never be left. Trees that have been grubbed up should be removed from the plantation immediately and be used for firewood. If it is necessary to keep the firewood for any time, it should be stored as far away as possible from fruit trees and preferably in a shed. To cut down dead trees without subsequently removing them is utterly useless, and to keep a wood pile in or near a fruit garden is a practice that cannot be too strongly condemned.

"The success of the above measure largely depends upon the co-operation of all fruit growers, including the owners of fruit trees in private gardens. Neglected fruit plantations are not only a great danger to other trees, but also to those orchards which are maintained in a proper sanitary condition. In view of the threatening character which Silver Leaf disease has assumed, it is earnestly hoped that an active campaign against it on the lines indicated above will be commenced and maintained in all parts of the country."

The suggestion that the disease affects only grafted trees (see p. 148) is not supported by the behaviour of trees on their own roots, Portugal Laurel, for example, of which hundreds of bushes have been destroyed by Silver Leaf. Seedling Plums are also attacked, and bushes

of the double flowered variety of Prunus triloba raised from sucker shoots have been killed after a healthy existence of many years. Moreover, Plums are rarely propagated by grafting, budding being practised almost universally.

There is little doubt now that Silver Leaf is caused by the fungus Stereum purpureum, which, as Leaflet No. 58 states, exists in the wood of the branches, and ultimately fructifies on the dead bark, when it produces myriads of spores, which are the means of spreading infection to other trees. The spores are distributed by wind, and that they are carried long distances is proved by the development of the disease on isolated Plum trees far removed from any likely source of infection. When gardeners look upon a Plum tree with Silver Leaf as they would a mad dog or a fox in the poultry yard, we may hope for the extermination of the disease. W. W.

IN the *Gardeners' Chronicle* and in the *Journal of the Board of Agriculture* concern has recently been shown with regard to the spread of Silver-Leaf disease. It has not always, I think, been clearly pointed out that Silver Leaf is due to the fungus, Stereum purpureum, which is fairly common and may be found probably in most plantations. I would suggest that it is necessary to trouble about the extermination of Stereum purpureum rather than to worry about the treatment of fruit trees. I do not believe that Silver Leaf is largely due to the transmission of the fungus from one fruit tree to another. Fresh infestations arise only from spores, and it must be a very roughly cared-for plantation of fruit trees if dead wood is allowed that will enable the Stereum to fructify. Practically, I suppose, one may say that Stereum purpureum is never found in a state of maturity in a plantation of Apples or Plums. The source of disease, therefore, must be sought in neighbouring plantations, and very probably the spores may be wafted from a great distance. It seems scarcely to be realised by some writers that Silver Leaf disease is well known to be due to the mycelium or spawn of a perfectly well known fungus. There is not only the one cause, but there is, further, only one means of increase, viz., by spores. It is true that the spores germinate and attack the tree through a wound, which can be protected, so that the treatment of wounds with tar will prevent communication of the disease, but, nevertheless, the best insurance, no doubt, is that of destroying the source of the spores. *R. Irwin Lynch.*

ORCHID NOTES AND GLEANINGS.

ODONTOGLOSSUM LADY VEITCH.

AT the meeting of the Royal Horticultural Society on the 5th inst. the Orchid Committee awarded a First-class Certificate to Odontoglossum Lady Veitch (see fig. 87), which was pronounced to be the best Odontoglossum of the year. The raisers, Messrs. Armstrong and Brown, obtained Odontoglossum Lady Veitch by crossing O. Hylandianum and O. Armstrongiae, two specially fine varieties, the exact record of the parentage of which is not available, although a fine form of O. Wilckeanum is known to have entered into the lineage, and in this case, as with some of the famous Vuylstekeae hybrids, it has had excellent effect.

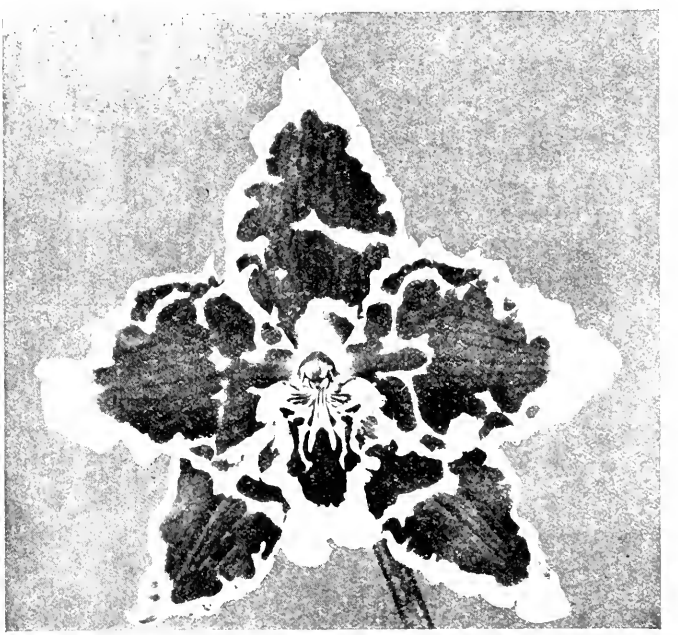


FIG. 87.—ODONTOGLOSSUM LADY VEITCH.

The ground of the flower is clear white; the rich blotching on the inner two-thirds of the segments are deep claret purple, the colour pervading the whole of the substance of the flower and appearing on the reverse side almost as bright as on the face. The crest of the lip is yellow and the upper surface of the column dark purple.

LAELIO-CATTLEYA SUNBEAM.

THIS hybrid between C. Tankervilliae (bicolor × Rex) and L. C. wisetonensis (C. Warneri × L. C. callistoglossa), sent by C. J. Lucas, Esq., Wareham Court, Horsham, has pink flowers tinged with yellow, the narrow elongated lip being derived from C. bicolor. The lip is yellow in the centre and marked with purple in front.

The Week's Work.

THE KITCHEN GARDEN.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

Cucumbers. — Cucumber plants in bearing which will be discarded as soon as the house is needed for other purposes should be grown in a temperature of 65° to 70° by night and proportionately warmer by day. They may be more liberally fed and top-dressed frequently with a rich compost that should be warmed before it is applied to the roots. Keep the plants scrupulously clean, and husband their strength by removing all young fruits that are not likely to be wanted; the latter precaution is especially needful where the demand for Cucumbers will be heavy from January onwards. If tree leaves are used wholly or even partially for making the hot bed, syringing will scarcely be necessary. Water warmed to 30° or 85° may be used freely where moisture is necessary; give plants in bearing warm, diluted liquid manure. The vapour arising from the beds helps to keep the plants in good health, and prevents the spread of red spider.

Celery. — Late Celery which has not been earthed up finally should be attended to at the first opportunity, as much further growth cannot be expected after this date. Choose a fine day for carrying out this work. Hold the heads together with the hands or temporarily tie the leaves to prevent soil from entering the hearts of the plants. Shallow planting and high moulding are best on heavy, wet soils, and generally no further protection need be afforded. Provided the ridge is rounded and made smooth, rain and snow water will pass away into the alleys on either side. When Celery is planted four or more rows wide in broad trenches it can be protected with mats, thatched hurdles, or similar materials.

Cauliflowers of the Autumn Giant kinds are still plentiful and good; the mild season has enabled the latest plants to mature good sized heads. Early winter protecting kinds are forming heads, which should shortly be plentiful, provided the weather continues mild. Ventilate freely plants of the Early London type which have been pricked out in frames or in temporary beds, and continue to transplant others where they will receive a little protection in cold weather.

Mustard and Cress. Continue to sow these salads weekly to maintain a constant supply. Place the boxes containing the seeds in a temperature of 55° or 60°.

THE ORCHID HOUSES.

By J. COLLIER, Gardener to Sir JEREMIAH COLMAN, Bart., Gatton Park, Reigate.

Calanthe. — Deciduous Calanthes of the Veitchii and vestita sections, together with their hybrids, are opening their flowers. The period of blooming will be extended if the plants are removed from their warm, growing quarters to a cooler and drier house. The Cattleya house is suitable, and the Calanthes may be arranged amongst the other occupants. The plants will make a bright display for some weeks to come, and the spikes will last longer after they are cut than when grown in a warm, moist atmosphere. After the spikes are cut let the plants have a complete rest, placing them on a dry shelf near the roof-glass. The temperature should not fall below 55°. Withhold water from the roots until the plants start into growth again in the spring.

Phaius.—The various species of Phaius are growing freely, but from now onwards until the early spring they will, provided their surroundings are kept moist, require very little water at the roots; endeavour to keep the compost just damp. P. Cooksonii, P. Norman, P. Marthae, and P. amabilis are beautiful hybrids, and very floriferous; they require far less room than plants of P. grandifolius and varieties of P. assamicus. Phaio-Calanthe Sedeniana, P.-C. Colmanii, P.-C. Arnoldiae, and P. C. Berryana

should be afforded similar treatment to the above. These plants are very subject to attacks of thrip and scale insects, which should be kept in check by sponging the leaves frequently with an insecticide. The plants should be grown in an intermediate temperature, and afforded plenty of fresh air at all times, but they must not be exposed to cold draughts.

Phalaenopsis.—P. amabilis, P. Sanderiana, P. Schilleriana, P. Stuartiana, and P. leucorhoda are in flower or developing flower-spikes. The plants should be watered with great care during the winter, as an excess of moisture at the roots may set up decay in the leaves. Examine the plants each morning, and, if the Sphagnum-moss is dry, sprinkle it with clear water as soon as the temperature rises to 65°. At the same time damp the outsides of the receptacles and the roots that are clinging to them with tepid rain-water. Take care that water does not lodge in the centres of the plants or in the axils of the leaves. Do not retain the flower-spikes for long after the flowers have developed or the plants will be weakened and permanently injured. These Orchids should be grown in a light situation, but not exposed to direct sunshine, even at this season. The surroundings of the plants should be damped once or twice daily, regulating the amount of moisture according to the weather. The late spaces of the house should be allowed to become dry for a short time during the middle of the day. The night temperature of the house during mild weather should be about 65°, with a rise of 5° during the day; on very cold nights when much fire-heat is necessary, a few degrees lower will suffice. Admit fresh air to the house without causing cold draughts, opening the top ventilators slightly on the side of the house sheltered from the wind.

PLANTS UNDER GLASS.

By E. HARRISS, Gardener to Lady WANTAGE, Lockinge Park, Berkshire.

Humea elegans. Plants of Humea elegans that require repotting may be attended to now. Use a light, open compost, such as a mixture of fibrous loam, leaf-mould, manure from a spent Mushroom-bed, lime rubble and sand. See that the pots are clean and efficiently drained, as it is most important that surplus water should pass away freely. When potted place the plants on a base of coal-ashes or gravel near the roof-glass. During the next few months Humeas require very careful treatment. Water should be given only when the plants are absolutely in need of moisture. Admit air through the top ventilators whenever the weather is favourable, and use fire-heat sparingly at all times.

Cyclamen. The earliest plants of Cyclamen latifolium are coming into flower, and need careful watering and feeding. They may be given liquid manure and a concentrated fertiliser at every alternate watering, but water must not reach the centres of the plants, or many of the flowers will damp off. Examine the plants once a week and remove faded flowers and decayed leaves. During the winter months Cyclamens should be grown in a light, airy house near the roof-glass. Give them plenty of air whenever the weather is favourable, admitting a little through the top ventilators during the night. Keep young seedling plants growing near the roof-glass in a house having a temperature of about 50°.

Perpetual-flowering Carnations. As soon as suitable cuttings are available a good batch may be inserted; shoots taken from the flower-stems are best for the purpose. The flowering plants are well rooted, and stimulants may be given them more liberally than hitherto. Diluted soot-water is an excellent stimulant for Carnations, and this may be used once a fortnight. Keep a sharp watch for red spider, and take measures to destroy the pest as soon as it is detected. Fresh air is essential to the well-being of Carnations, and this must be given more or less according to the weather. A temperature of from 45° to 50° is ample except during times of bright sunshine, when 10° higher may be allowed. Aphis may be kept in check by light fumigations with nicotine.

Souvenir de la Malmaison Carnations. "Malmaison" Carnations should not be grown with the perpetual varieties, as they require cool conditions at all times. Fire-heat should not be used except when severe frost threatens, and then only to keep the thermometer from falling below freezing point. Water the plants sparingly for the next two or three months, and grow them near to the roof-glass. Syringe them with a fungicide occasionally to keep them free from disease.

THE HARDY FRUIT GARDEN.

By JAS. HUDSON, Head Gardener at Gunnersbury House, Acton, W.

Out-door Vines.—Vines out-of-doors should be pruned, and nailed or tied, as the case may be. Do not lay the wood in too thickly, but depend on young shoots rather than upon old spurs. Young Vines that have been planted within the past year or two should be allowed to extend themselves. No protection need be given, as Vines are hardy in this country. Examine the borders, prick up the surface soil, and give a light top-dressing. If the soil is dry give it a good watering.

Out-door Figs.—These should now be pruned, removing all the green, succulent wood and retaining well-ripened growth. In districts where frosts are found to be injurious to Figs it will be well to bunch the growths together and then protect them with straw to a moderate extent. Apply a light mulch around the base of the stems and water the roots if necessary. Should the Fig trees have made extra strong growth, some root-pruning will be desirable, but leave this (for preference) until the spring.

Fruit-Room. There are not many fruit-rooms with an excess of fruit in them this season, therefore close attention should be given to the few fruits in the store-room. Remove all slightly-damaged fruits, and use them as quickly as possible. Make the most of what few Pears there may be. Apples will prove very valuable a few weeks later.

American Blight. Of all insects that are troubling the fruit-cultivator none is worse than American Blight. I repeat my former advice to take speedy, and when necessary extreme measures to destroy the pest. Two dressings with spray fluids at a maximum strength will be needed, and in extreme cases, where the trees are easily accessible, apply the paraffin and soft-soap emulsion previously advised, but syringe with hot water in advance of this application for the sake of its penetrating power. Where orchard trees are not easily accessible, and are infested with blight, it will be expedient to cut down the trees and burn them, especially if they have passed their best condition of bearing. In the case of younger trees it may be found expedient to cut them back and re-graft them in the spring.

FRUITS UNDER GLASS.

By W. J. GUISE, Gardener to Mrs. DEMESTER, Keele Hall, Newcastle, Staffordshire.

Pot Figs. It is not advisable to commence the forcing of pot Figs so early as usual in view of the restricted fuel supply. Fire-heat is not necessary for the first fortnight; a temperature of 45° is suitable, and the warmth should not exceed 50°. If the pots are stood (not plunged) on a bed of leaves or leaves and manure the roots will receive sufficient warmth, provided the fermenting material is moved occasionally. Syringe the trees lightly in the forenoons of fine days and water the roots very sparingly. When the buds commence to break plunge the pots to their rims in a bed of fresh leaves and stable litter to afford a bottom heat of 70°. At this stage the night temperature should not fall below 50°, but be increased gradually to 60° when the fruits begin to swell. Considerable economy in fuel may be effected by keeping the trees in a cool house for another month or six weeks.

Successional Fig Trees. Successional and late trees in pots are defoliated. If the shoots have been well thinned and pinched during the summer very little pruning will be required beyond removing an occasional weak shoot. Let the plants be washed carefully with Gishurst compound or soapy water. Use a soft paint-brush for the cleansing process, as a hard brush might damage the points of the shoots and embryo fruits. Every joint, crevice, and shoot should be painted down to the surface of the soil. Place the trees on an ash surface in a cool, frost-proof house. Water the roots sparingly from now onwards, and ventilate the house freely day and night during mild weather.

Established Fig Trees. Fig trees planted in inside borders intended for starting in the New Year should be cleansed and washed forthwith. The large tree at Keele fills the whole of a large house, and the pruning will be limited to the removal of a few old, exhausted shoots to provide room for new, basal growths. Every branch should be loosened from the trellis and carefully washed with soapy water or an insecticide. Trees trained near the roof-glass get very dirty, and unless stringent precautions are taken to have the trees thoroughly clean, scale, red spider and other insect pests will be troublesome next year. Figs under complete control are not difficult to manage, and failure to produce fruit is undoubtedly usually attributable to a too free root-run, which encourages the development of strong, fruitless growths. Root-pruning should be done directly the last crop of fruit has been gathered, and if still in arrears the work should be finished forthwith. When top-dressing the borders remove the old mulching material and exhausted soil, and replace with a compost of good turfy loam mixed with bone-meal and mortar rubble. If the soil is dry, first water the border, otherwise one watering will suffice after the new top-dressing is applied. Keep the house as cool and airy as possible until the time arrives for starting the trees into growth.

THE FLOWER GARDEN.

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

The Rockery. It occasionally happens that alterations are called for in the rock garden, and these may be carried out during the present month. It will be found a good method to finish a certain amount of work each day, lest a change of weather should cause the work to stand over for an indefinite period, and in the end call for labour at a period when it would be difficult to supply it. Routine work at present consists in clearing away all fallen and dead leaves, providing protecting material for tender plants, cutting over deciduous Ferns and other subjects, and leaving the whole in a trim, neat condition for the winter. Helleborus latifolius is in full flower, H. angustifolius showing white in the buds, and "coloured" forms approaching flowering. Snowdrops, Primula Juliae, and a few other easily excited plants are exhibiting signs of growth.

Roses. If it is intended to apply protective material to Roses it is now full time to do so. The use of rank, strawy manure in dressed grounds is very unsightly, and when the point has been pressed for a reason why Roses above all other flowering shrubs should be treated in that way I have never had a satisfactory reply. Dry bracken is equally efficient for protecting the stems, and not an eyesore, and to more thoroughly protect the plants close to the ground a little heap of soil. I use old compost put to each, never fails in its purpose. It is remarkable what a power of resistance against cold or the effects of cold such a simple material possesses. Flaky leaf-mould is also excellent for the purpose.

Lily-of-the-Valley. Our large plantations of Lily of the Valley got so weed-infested that the crowns had to be lifted this year. Fortin's variety was overhauled and the best clumps replanted in September, and about the present date I hope to replant the common variety. Only the best crowns are kept, and these are planted in long lines at 12 inches apart and 4 inches between the lines, the tips of the crowns being just covered with soil. They are made firm in the soil with the foot as the work proceeds, and some well-decayed manure is worked into the ground as planting progresses. Why, it may be asked, should a common form be cultivated when the much superior Fortin's variety can be had in quantity. One reason is that the latter is late in flowering, though the season may be, and is, extended by planting in various positions, thus making a difference of a few weeks in flowering.

EDITORIAL NOTICE.

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

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

Special Notice to Correspondents. — *The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.*

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

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

APPOINTMENTS FOR DECEMBER.

MONDAY, DECEMBER 2—
Chamber of Horticulture meeting at Caxton Hall.

TUESDAY, DECEMBER 3—
Roy. Hort. Soc.'s Comms. meet. Horticultural Club Com. meets at 3.30 p.m. at 2, Whitehall Court. British Carnation Soc. annual meet., 5 p.m., at 35, Wellington Street, Covent Garden.

MONDAY, DECEMBER 9
United Hort. B. & P. Soc. Com. meet

WEDNESDAY, DECEMBER 25—
Christmas Day.

THURSDAY, DECEMBER 26—
Bank Holiday.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 41.2°.

ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, *Wednesday*, November 27, 10 a.m.: Bar. 29.9, temp. 46°. Weather—Dull.

Rural Reconstruction.

The first speech of the Prime Minister's election campaign dealt on broad lines with the problem of agricultural and horticultural development. It is of profound significance that the Prime Minister should have put in the very forefront of his programme the need for rural reconstruction. Nobody will dispute his view that the maintenance of the nation as a whole must depend upon a vigorous and populous countryside. As the Prime Minister pointed out, the industries of the nation are constantly recruiting their man power from the rural population, so that even looking at the problem from the industrial point of view, the larger the source of recruitment the more will industries flourish. It is not to be expected that the Prime Minister should at this stage produce detailed plans illustrating the method whereby this desirable state of affairs is to be achieved. Nevertheless, the indications which he gave are of great interest. In the forefront he places better housing and higher wages; he proceeds to indicate what are the means whereby the agricultural and horticultural industries may be able to support the increased charges which they are bound to be called upon to sustain. The solution which he advocates is greater production and less costly methods of transport. Economy in production is apparently to be effected by State control of fertilisers, and if State control can be made to result in a reduced cost and extended use of fertilisers, there is no doubt but that production will be increased.

Improved methods of cultivation are to be sought in the closer association of agricultural and horticultural science with practice, and here again it cannot be doubted that although the best cultivators of this country have little to learn in the way of scientific production, the average production of the country would be raised if a knowledge of scientific principles of agriculture and horticulture were more widely diffused.

The subject of transport is one which will appeal greatly to the producer, and it is along the lines of more economical transportation of produce, and also of raw materials, that greater economy in production may be reached. This last subject is of such importance that we trust the Chamber of Horticulture will lose no time in taking it into consideration and in drawing up a report illustrative of the present cost of the transport of horticultural produce and indicating ways in which reform may be achieved.

The Prime Minister discloses the intention of making large provision for small holdings on which are to be settled returned ex-Service men. So far, at all events, as specialised, that is to say, horticultural small holdings, are concerned, it is to be hoped that the problem will be dealt with along common-sense lines. To spread promiscuously small holdings over the countryside will be bound to lead to failure. The proper procedure is to make a survey of all those districts in which soil and climatic conditions are favourable to intensive cultivation; to select from among them those districts which are well watered and are either provided with, or are capable of being provided with, transport facilities, and then to make a further selection so that only those districts shall be chosen for holdings which are placed in favourable conditions with respect to markets.

Once the capacity and requirements of the market are known, the type of intensively cultivated holdings can be determined, and it is to be assumed that the small holders with full information with respect to those crops for which a large and near demand exists will be prepared to specialise in the growing of them.

Lastly comes the selection of men and the grouping of holdings into what may be called economic units; that is to say, colonies of holdings sufficiently numerous and large to admit of the bulking of produce, and sufficiently progressive to be prepared to grow a limited number of varieties of a limited number of crops. To make a scheme successful, it will be desirable that all the holders to be established in a given district, or at all events those who were not highly trained already, should work for a time under the direction of a practical expert before proceeding to undertake the cultivation of their own holdings.

Chamber of Horticulture.—A meeting to which representatives of all horticultural interests are invited will be held, under the auspices of the Chamber of Horticulture, in the Council Chamber, Caxton Hall, Westminster, on Monday, December 2, at 2.15 p.m. The President of the Board of Agriculture, the Rt. Hon. R. E. PROTHERO, has expressed his intention of being present at this meeting.

Linnean Society.—At the general meeting of the Linnean Society of London, held on the 7th inst., Mr. ARTHUR WARWICK SUTTON, J.P., V.M.H., was, upon the nomination of the Council, elected to fill the vacancy in the Council caused by the death of the late Professor GEORGE PLIMMER, F.R.S.

Lead Nitrate as a Fertiliser.—According to experiments conducted in America small quantities of an aqueous solution of lead nitrate stimulate the growth of plants. The maximum effect was produced when 0.5 grams of lead nitrate per litre of nutritive solution was used (1·60 oz. to 1¾ pint). In experiments in open ground the lead nitrate was used as a fine powder and mixed with a fertiliser to be used as a top-dressing. Though successful in the cases of Beet, Wheat, Oats, Peas, etc., the use of lead nitrate produced no beneficial effect with Potatos.

Cinemas and Cultivation.—The Report of the Minister of Agriculture (Ontario) for 1917 records the systematic introduction of motion-pictures (movies) into Canadian agricultural and horticultural education—films of orcharding, vegetable growing, seed production, as well as purely agricultural subjects were shown at rural centres, and appear to have evoked great interest.

Disease Resistance.—Progress continues to be made in America in isolating disease-resistant strains of plants of economic importance. According to information contained in the *American Journal of Botany* (June, 1918), Asparagus-growing, which at one time bid fair, owing to the ravages of Rust, to become impossible in America, is now being resumed owing to the fact that certain English varieties—chief of which is Reading Giant—have proved to be rust-resistant. More important from the point of view of British growers is the statement that strains of Tomatos are being raised which are resistant to Fusarium wilt disease. Similarly, strains of Flax resistant to Fusarium lini have been produced and have made it possible to continue the cultivation of Flax in districts where this disease is prevalent.

Testimonial to Mr. C. S. Fuidge.—At the end of the present year Mr. C. S. FUIDGE will have completed 50 years of official connection with the Southampton Royal Horticultural Society, and it has been decided to recognise his valuable services during that long period by presenting him with a testimonial at the annual meeting of the Society in January next. The promoters of the testimonial believe many exhibitors at the Southampton Shows and also at the Horticultural Section of the Royal Counties Agricultural Shows, superintended by Mr. FUIDGE, will desire to show their appreciation of Mr. FUIDGE's services by sending contributions to Mr. J. T. ROBB, J.P., Hon. Secretary, Fuidge Testimonial Fund, 54, Inkerman Road, Woolston, Southampton.

Fertiliser Supplies.—We are informed by the Food Production Department that under the distribution scheme of the Government the production and delivery of sulphate of ammonia, superphosphate, and ground basic slag for the five months ending October 31 was 30 per cent. higher than during the corresponding period of last year.

Sale of Allotment Produce.—A rumour appears to be current in various parts of the country to the effect that allotment holders are prohibited from selling the surplus produce of their land unless they have obtained a retailer's licence. The Food Production Department has issued an assurance that this rumour is entirely without

foundation. No order compelling allotment holders to obtain a retailer's licence has been made by the Ministry of Food, nor does that body propose to make any such order. Allotment holders are perfectly at liberty to dispose of their produce in any way that they deem advisable.

Sale of Nursery Stock for War Relief Funds.—Having decided to establish a seed-testing station at Maxwellheugh, and to devote their land to the raising of pedigree stocks of farm and garden seeds, Messrs. LANG AND MATHER, of Kelso, offered the whole of their nursery stock as a free gift to the Border Union Agricultural Society on behalf of the Edenhall Hostel for Limbless Soldiers, the Newton Don Red Cross Hospital, and the Fund for Providing Comforts for the King's Own Scottish Borderers Regiment Prisoners of War Fund. This generous offer was accepted, and at the recent sale by auction, opened by Sir GEORGE DOUGLAS, Bart., a sum of upwards of £500 was realised.

Land Reclamation.—The War Cabinet has asked the Board of Agriculture to obtain information as to the possibility of carrying out schemes of land reclamation in various parts of the country if supplies of soldier labour should be available for this purpose during the period of demobilisation. The Food Production Department has circularised the Agricultural Committees of the counties on the subject. The demands of the farmers for labour required on their farms will be fully met before any soldiers are started on reclamation schemes. After the ordinary requirements of the farms have been met it is proposed that any waterlogged areas should first receive attention. Only when both these matters have been dealt with in a satisfactory manner is it intended to take up general reclamation schemes. "It is possible, however," according to the official circular, "that the normal demands of the farms and the treatment of waterlogged areas may not absorb all the labour that will be available, and, if so, it could usefully be employed in reclaiming areas which at present are uncultivated and are producing nothing. County Committees are asked to furnish at once particulars of any areas exceeding 25 acres at present uncultivated which could be brought into cultivation if labour and funds were available for the purpose. Land which is above 800 feet in altitude should not be included, and any areas which might be reclaimed from the sea should also be reported. Individuals with knowledge of areas suitable for reclamation may be doing a useful public service by writing to the Food Production Department, 72, Victoria Street, S.W. 1, giving details. It may be added that during the past two years a considerable number of minor reclamation schemes have been carried out by County Committees or private owners, and that there is no doubt whatever as to the remunerative nature of such enterprises where the area is well chosen and the scheme is intelligently directed and adequately financed. Some fine crops of Potatos grown in England this year were produced by land which as recently as February last was rough heath covered with brushwood.

Mr. W. A. Cook. We understand that Mr. W. A. COOK is shortly leaving Abbots Wood, owing to the death of his employer, the Hon. ARTHUR IAN DAVEY, who, it will be remembered, was one of the victims of the "Leinster" disaster. Both Mr. and Mrs. DAVEY were keenly interested in gardening, and under Mr. COOK's supervision many new features were added to the gardens at Abbots Wood. Mr. COOK, who was formerly gardener to Sir EDMUND LODER, Leonardslee, has an extensive knowledge of the cultivation of trees and shrubs and a wide experience in gardening generally, as his useful notes published from time to time in these pages testify. We trust that he will soon find fresh scope for his acknowledged abilities as a gardener.

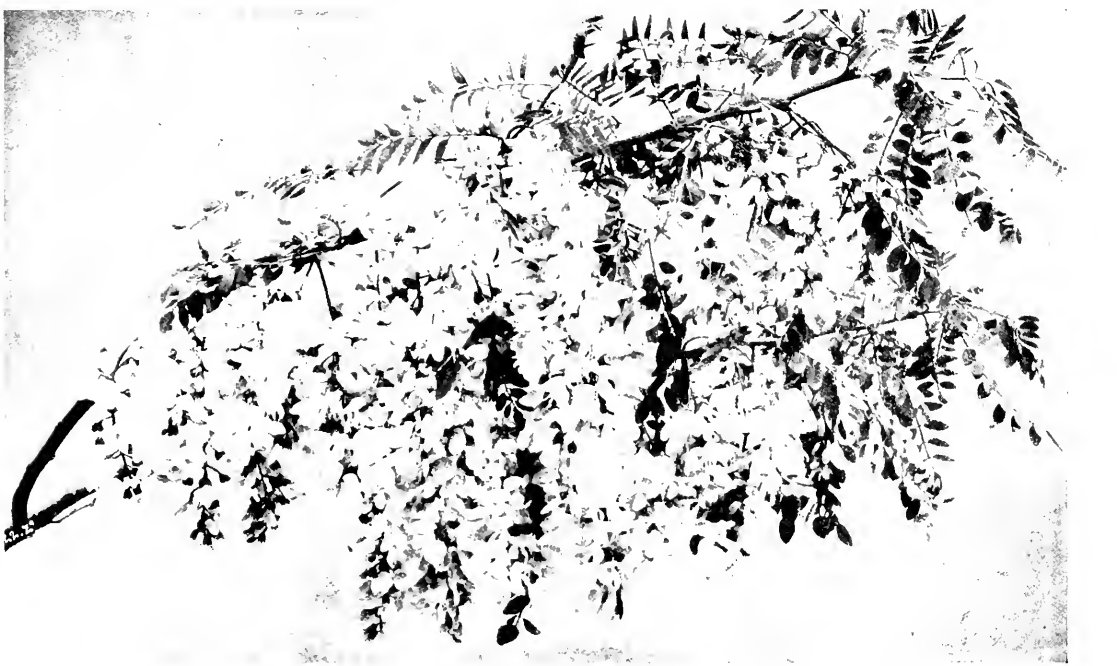


FIG. 86.—ROBINIA PSEUDACACIA VAR. COLUTEOIDES.

Photograph by E. J. Wallis.

Robinia Pseudacacia var. coluteoides. Many varieties of the Locust or false Acacia are in cultivation, and they differ in habit of growth, leaf and flower. The variety coluteoides, illustrated in fig. 86, is one of the most distinct and desirable. The tree-flowering character of the plant is remarkable. When the spray illustrated was photographed in June the whole tree, some 20 feet in height, was literally weighed down with enormous quantities of blossoms. As the varietal name coluteoides implies, the foliage, racemes, and individual flowers are smaller than those of the type. The tree under notice was obtained from Spaeth's nursery in 1905, and is one of the most distinct and desirable of a large number of Continental varieties of this native of the Eastern United States. In the last available catalogue of this firm, 1914, upwards of sixty varieties are listed. The usual method of propagating the varieties is to graft them on small plants in pots, on the roots of R. Pseudacacia, the common Locust. This is best done in spring in propagating cases, in a moderately warm pit.

British Carnation Society.—The annual general meeting of the British Carnation Society will be held at the offices of the British Florists' Federation, 35, Wellington Street, Covent Garden, W.C., on Tuesday, December 3, at 3 p.m.

Development of Afforestation in the United Kingdom. The business of making preliminary arrangements for developing afforestation in the United Kingdom has been placed in the hands of an Interim Forest Authority which has 1, Whitehall, S.W. 1, as its temporary address. The chairman is Mr. F. D. ACLAND, and the other members are Lord CLINTON, Lord LOVAT, Major D. DAVIES, Col. W. STEUART-FOTHRINGHAM, Mr. T. B. PONSONBY, Mr. A. MACCULLUM SCOTT and Mr. R. L. ROBINSON.

War Items.—We regret to learn that Lance Sergt. P. R. CATCHPOLL was recently killed in action in France. He was the youngest son of a large family living in Hampton, and at the early age of 17 years patriotically enlisted

in the York and Lancaster Regiment. He had been at the Front 3½ years, and was only 21 years old at the time of his death. Before enlisting he was employed in the nursery of Mr. VICTOR, Marling Park, Hampton Hill. In an army of brave men he was conspicuous for exceptional daring and gallantry. He had been wounded three times; he won the Military Medal in 1917, and was recommended for the Distinguished Conduct Medal just before his death.

—— Lance-Corpl. H. CATCHPOLE, Middlesex Regiment, an elder brother of the above, has also made the supreme sacrifice for his country. He died at Berrington War Hospital, Shrewsbury, from wounds received in action in France, and was buried with military honours at Teddington, where his widow and three young children reside. He enlisted in 1915, and had been wounded four times and was once gassed. Before enlisting he was employed at Mr. LENIENT'S nursery, Hampton. Both brothers were greatly esteemed in the Hampton neighbourhood.

ON INCREASED FOOD PRODUCTION.

MUNICIPAL PRIZES FOR ALLOTMENTS.

DUMFRIES Town Council has voted the sum of £10 for prizes for allotment gardens. This is expected to be an annual grant, and comes out of the "Common Good" of the burgh. Unfortunately not all Scottish Town Councils have a "Common Good" from which to defray such grants.

SUNFLOWERS IN WASTE GROUND.

So far as can be learned by local enquiry the experiment of growing Sunflowers for seed was not a success in 1918. The damp season was all against the ripening of the seed, and the yield, instead of being 12 or more cwts. to the acre, as it is said to be in Germany, reached—at all events in those cases which have come under notice—not more than half that amount. The smallness of yield is to be attributed in part to the unfavourable season and in part to the fact that every garden pest of the larger sort, birds and squirrels in particular, took large toll of the ripening seed. Much of the seed sown, moreover, proved by no means uniform, some of it throwing branching plants with numerous small heads and some single-stemmed plants with one large flower-head. The growth in fairly good ground was excessive, the plants often reaching to a height of 15 feet. So far as the plots which have been inspected show, transplanted plants did no better than plants raised by sowing in the open. It would be interesting to have the experience of others who grew Sunflowers this year. *A. N.*

SEAWEED.

GARDENERS who live on or near the coast would do well in these days of great scarcity of manure to make use of seaweed. It is a source of manure supply which is greatly neglected; tons of it lie derelict on the shores round England.

Two ways of using it may be recommended. The first is to collect it when very wet and stack it in an out-of-the-way place, covering it with earth and allowing it to remain undisturbed for 8 or 12 weeks. Usually by that time it has become first-rate humus, and can be dug in freely, especially for the Cabbage crop, as it appears to control club-root to a large extent.

The second way is to mix the seaweed in a fresh, wet state with an equal quantity of hot, fermenting stable-dung, make it into a stack as before, and leave it a month before using it. This, I consider, is the best way.

The mixture of seaweed and manure seems to be an ideal fertiliser for Peas. Trenches are taken out and a good layer of the mixture put in, and covered with several inches of soil. The Peas are then sown, and experience has proved that a greatly increased crop results. *Yorkshire.*

HOME CORRESPONDENCE.

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

Helenium Riverton Gem.—This desirable autumn-flowering border perennial reaches a height of about 4 feet, and grows so tast as to soon form an effective mass or clump. The colour of the bloom is difficult to define, but the general effect is that of a bright orange bronze; closer inspection, however, reveals the fact that there is a wide difference in the tint of the flowers according to the length of time they have been expanded. While this Helenium is always showy when in bloom, it is particularly striking when fully exposed to the rays of the declining sun. In these conditions the entire mass of flowers appear to be lit up with a fiery suffusion, and the rich glow is perceptible for some distance. In my suburban garden in the south-west of London, where the soil is of a stiff, clayey nature, and very cold during the winter, the plant succeeds perfectly. Opinions differ, and the yellow-flowered Riverton Beauty may be by some given the first place, but Riverton Gem is my favourite. Both varieties were, I believe, raised in America. *W. T.*

The Survival of Weed Seeds.—I am interested in the experiments and observations of Winifred E. Brenchley (p. 193) in relation to the survival of weed seeds. She describes how the store of seeds in the top soil gets depleted in time owing to various circumstances, including a new surface vegetation. I have had the opportunity this year of observing that buried seeds can accumulate in uncultivated land. On a piece of grass land a scattered few plants of Spergularia rubra have been flowering and fruiting since 1882 to my knowledge. This year the land was used for the production of food, and partly dug, partly trenched. Seedlings in large numbers began to come up over a wider area than one could have expected, and by the end of September formed a close green carpet in places where hoeing had been neglected. Trifolium subterraneum had been observed as a rare plant some years ago, yet when the grass was dug down many seedlings came up over a wide area, some of them making patches a foot in diameter and flowering. Senebiera didyma was recorded on a spot close to this land in 1865, but on several occasions since then, when the surface of the ground was broken for making or mending a path, or for other purposes, seedlings of the Senebiera came up in abundance, and were plentiful this year. The seeds of the Spergularia must have been accumulating over a period of many years; Trifolium buries its seeds; but all three plants must have been scattered by a variety of ways, and taken into the soil by worms, rain, sand bees and other agents. While discussing the problems of the seeds and how they got in the old broken up pastures, Miss Brenchley seems to have taken no account of the seeds carried on the feet of domestic animals, hares, rabbits, rats, mice and birds, and buried by the natural agencies she mentions. Seeds get carried on the muddy feet of the animals I mention, also on feet and legs made wet by rain or dew when plants are shedding their seeds. Darwin gave an account of seeds carried by partridges in this way. *J. P.*

Pruning Newly-Planted Apple Trees.—The remarks by *Market Grower* on orchards are always of interest to the practical fruit grower. To my mind, his remarks, p. 157, on not pruning trees sufficiently the first few years, go to prove that it is a mistake not to prune such trees the same season as they are planted. Yet how often do we see this error committed. The pruning of the trees should follow planting as a matter of course, hence my object in drawing attention to what I look upon as a serious error in hardy fruit culture. I have many times referred to this subject, and have no hesitation in again doing so, on the plea that there are new readers who may be glad of the reminder or the information as to procedure. From experience I am convinced that trees, especially standards, grow in the near future much more robustly than those which are not cut back the same season they are planted. Trees cut back to within a few inches of their base should make more progress than others not so pruned, because the energy of the tree is concentrated in a given space, and not extended over the whole area of the unpruned tree. Trees not pruned, instead of making vigorous shoots the first or second year after planting, invariably form fruit-buds the whole length of their shoots, and that is not what is wanted, for the quicker a large branch area is formed the sooner will fruit be obtained in quantity. *E. M.*

The Origin of the Apple, Pear, and Other Fruits.—As a believer in the multiple origin of cultivated fruits, I cannot let W. W.'s unitarian heresy (see p. 175) pass without a word of protest. There is, I think, ample evidence that several species have played a part in the constitution of the Pear, and we know that in recent times Pyrus sinensis has been crossed with cultivated varieties and given such fruits as Keiffer, and Le Conte. In Apples authorities have recognised P. prunifolia, P. dasyphylla, P. acerba, and the dwarf P. paradisiaca as probable parents. In the Vine Vitis vinifera does not by any means constitute the only species concerned. V. Labrusca and a host of American species have played a part. In the Strawberry Fragaria chiloënsis, and F. virginiana have been used to give European species fresh characters of size and flavour. The Raspberry, Currant, and Gooseberry also show every sign of multiple origin. Perhaps W. W. will reply that he does not consider the above as species, but only as varieties, which leads us to the old query: What is a species? But whatever we call them, there is, I think, plenty of evidence that our fruits do not show an "unitarian" origin, but rather a multiple one. *E. A. Bunyard.*

The Gardeners' Royal Benevolent Institution.—It is to be hoped that the appeal of Sir Harry J. Veitch, page 203, on behalf of this most deserving institution will be liberally responded to, and the required amount obtained. From my own experience I can speak of the great benefits this institution has conferred upon many gardeners, when old age and illness (an ill-matched pair) has put an end to their activities. As one of these, a particularly bright feature of my life is the receipt of the quarterly cheque, even if its purchasing power is much less than it was prior to the war. It is a great pity that so many young gardeners fail to see the benefit of subscribing to this admirable institution, often in their old age to regret their apathy in this respect. Personally, I commenced to subscribe when comparatively young, with the result that I was allowed sufficient votes to ensure my election at the first attempt. Though now quite an invalid, and confined entirely to the house, I am still vigorous enough to say: "Bless such an institution that confers these benefits on us old gardeners, and bless those that have worked so hard for it for many years." *A Pensioner.*

The Loss of Clematis in Gardens.—It has been reiterated that the cause of "die back" of Clematis is due to grafting. It appears, however, equally in our experience among self-rooted plants; in fact, so badly were our "laid" plants affected that we had to give up this method of propagation. As this has also been the experience of other growers, is it not about time that this constantly repeated statement was either substantiated or withdrawn. *George Bunyard and Co., Ltd., Maidstone.*

American Blight.—All, I think, who have recently discussed means of getting rid of American Blight on Apple trees have treated the question in a manner that suggests their thoughts to have been engaged only on the manner of cleaning the trees during winter, for one cannot paint the innumerable leaves individually with a brush! In a previous communication I remarked on the condition of some of the trees here, how the foliage was seriously infested, and how it was cleared by spraying with a solution of 2 oz. of Gishurst compound to 1 gallon of water. Not only were the insects killed, but none has been seen since. I stated at the same time and in the same communication (see p. 28) that the Blight affected only a limited number of varieties, quite a number of Apples being immune. The only person who has agreed with that statement is *R. C., Wilts* (page 122), who advises as a protective measure the Australian practice of working varieties on stocks immune to the pest. All trees that are affected do not have Blight hibernating on their roots. On the contrary, Keswick Codlin, of which large num-

bers of trees are grown here, is an example of a variety which is attacked only on the roots. The stock on which these trees are worked may not be immune, but on the whole it is obvious that the question is more involved than appears on the surface. *R. P. Brotherston, Tynninghame Gardens, Prestonkirk.*

SOCIETIES.

SCOTTISH HORTICULTURAL.

NOVEMBER 5.—The monthly meeting of this Association was held on the 5th ult. Mr. Robert Fife, the president, was in the chair, and there was a good attendance.

A lecture on "Liquid Air" was delivered by Dr. Leonard Dobbin, University of Edinburgh, with experiments. After a few general remarks on the composition of the atmosphere, and on the conditions requisite for the liquefaction of gases in general, the lecturer referred to the principle of cooling a compressed gas by its own expansion, and described how the principle is effectively applied in so-called self-intensive apparatus. The construction of the vessels used for the preservation of liquid air from rapid evaporation, and the employment of similarly constructed vessels in the well-known thermos flasks were then dealt with. A number of experiments were shown in illustration of the extremely low temperatures to which objects immersed in liquid air are cooled, and of the remarkable changes in their properties resulting from this cooling. Some useful applications of liquid air were afterwards mentioned, including its employment for the production of a high vacuum by making use of the great absorptive power for gases of charcoal cooled by it, and further, the separating from it of practically pure oxygen and nitrogen. The latter of these gases is one of the requisite materials in the manufacture of certain nitrogenous fertilisers, and liquid air is one of the cheapest sources from which it can be obtained.

CROPS AND STOCK ON THE HOME FARM.

FARMING WITHOUT SHEEP.

OWING to the difficulty of obtaining artificial food for fattening lambs, the high price of hay, the partial failure of the root crop in southern counties, the shortage of manual and horse labour, and especially the low prices prevailing, I fear many of the breeding flocks of sheep are being reduced in number.

Although Hampshire Down sheep are among the best for close folding to benefit the land from a manurial point of view, and their lambs come quicker to a useful size early in the year than those of any other breed for their age, it cannot be denied that they are expensive. A flock of from 300 to 400 ewes costs about £2 600 per annum; add to this the anxiety when there is a shortage of food, bad weather at lambing time, and sundry other difficulties, the sheep are not always a reasonable financial success.

Many farmers are keeping dry sheep only in the place of a ewe flock, as these can be fattened when the requisite food is available and sent to market, while the stock can be replenished at will.

A flock of 500 ewes will consume from December 1 (or earlier, according to the weather) to April at least 150 tons of hay; this, valued at £3 per ton, means a large outlay—£1 200. Such a prospect will lead, I fear, to a diminution of sheep, much to the regret of what I term the older type of farmers, who think Corn cannot be grown successfully without sheep. This idea may be discarded at once, as I know several farmers who do not keep sheep on their arable land, but they produce Corn in abundance. When inspecting one of these farms last harvest time I was surprised to see and hear of crops of Barley growing where Barley had been grown on the same plot for four years in succession. In this connection I have another experience to relate; only last week, when threshing a 6-acre plot of Red Standard Wheat grown on soil only 4 inches to 5 inches deep over chalk, situate on the Downs, the average return was 10 sacks per acre of an excellent sample of miller's Wheat, and sheep had not been on this land for twelve years.

I refer to these instances to illustrate the possibilities of Corn production without sheep, and to encourage small holders who wish to grow Wheat and who cannot possibly keep sheep. The crop of Wheat just quoted is another instance of what despised down land is capable under reasonable tillage. This plot was originally a part of the Downs used only for sheep grazing in the summer, but it was ploughed up fifteen years ago and has produced many good crops of Corn and Potatos since.

EXTENSION OF ARABLE LAND.

I am pleased to learn that the Food Production Department intends to increase and improve the arable land in the country with a view to obtaining greater yields of cereals and other foodstuffs. The more arable land there is under good cultivation the greater is the prospect of the nation becoming self-supporting. I am still more pleased to hear this Department intends to enforce the better cultivation of badly managed arable land.

The Advisory Committee for our area of 37 000 acres has instructions to survey all farms with a view to increasing the arable land where advisable, and I hope it will also suggest the improvement of existing pasture land, which in so many instances could produce heavier crops of grass or hay for milk production. Too many persons are content with half a ton of hay per acre without any outlay in manure or labour. Nothing less than double that quantity should satisfy anyone. No doubt the Department will be prepared to assist deserving cases, as this would be beneficial to the nation.

With a reduction in the price of fertilisers and more skilled labour available, I am looking forward to greater activity in the cultivation of the land, and especially to the increase of small holdings which have in the past three years given a high yield of desirable produce. Now that the public realises the great value of vegetables and fruit as food there should be a great stimulus to the small holding industry.

LOCAL MARKETS.

The establishment of local markets under the auspices of the Food Production Department for the sale of surplus vegetables, fruit, flowers, poultry, eggs and butter will give a great impetus to cultivation and considerably add to the food of the nation. The idea is to arrange for a public auction (already in existence in many counties) about twice weekly in a convenient part of a town where the consumer can be brought into direct touch with the producer without the aid of the middleman. In rural districts cottagers, gardeners and allotment holders would grow much more produce if they could dispose of it readily at a reasonable price, and thus receive a due reward for their labour.

For this purpose Hampshire is divided into three areas, and for one of these areas I am a member of the committee detailed to arrange a scheme. The most difficult problems are the necessary buildings and the transport of the produce. The idea is to collect produce at various centres and convey it by motor to the market hall, where it would be sold by public auction. A small collecting and selling fee would be charged. Such a scheme would also tend to benefit the town dwellers in various ways.

Two such markets are established in Bournemouth, and are a success from all points of view.—*E. Molyneux.*

MANURES.*

As a general rule Wheat grown after Potatos, Mangolds or Clover will need no artificial manures. Exceptions arise where the crop does not suitably start growth quickly or ripen sufficiently early; in these cases superphosphate or basic slag should be applied at 1½ to 2 cwt. of superphosphate or 3 to 4 cwt. of basic slag might be given, and it should be applied at the time of sowing the seed. The heavy dressings of basic slag used in some parts of the Eastern and Midland counties should only be given where there is sound reason to suppose them necessary.

* "Notes on Manures in November." From the Rothamsted Experimental Station, Harpenden, Herts.

Barley grown after roots which have been fed to sheep on the land may need superphosphate if there is reason to fear that the crop will become lodged. In present circumstances 1½ cwt. to 2 cwt. per acre might be allowed to obviate this trouble.

Oats may repay rather more generous treatment, and if they are receiving no dung may have ¾ to 1½ cwt. sulphate of ammonia, 3 cwt. of superphosphate, and if the soil is light 2 cwt. salt per acre.

Corn crops following a previous corn crop will also require liberal treatment: ¾ to 1½ cwt. sulphate of ammonia according to the condition of the land, 2 to 3 cwt. superphosphate, or double this quantity of slag, and on light or chalky soils 2 to 3 cwt. of salt. Some farmers would be inclined to use more; in a case recently brought to the notice of the Rothamsted Experimental Station the farmer was proposing to add 2 cwt. of bone-meal to this mixture, but the addition could not be recommended, as there was already sufficient plant food for the needs of the crop.

Roots require very careful consideration. In many parts of the country it is customary to use dung and, in addition, heavy dressings of artificials. For Swedes and Turnips this plan cannot as a rule be recommended. Large numbers of experiments have shown that Swedes and Turnips do not generally respond to these heavy dressings, and equally good results have been obtained with smaller applications. Unless, therefore, a farmer has very definite evidence that the artificials will really give a useful return he should not use them too liberally. The practice of giving a small dressing of superphosphate to "bring the roots to the hoe" is, of course, justifiable. One half cwt. of sulphate of ammonia and 3 cwt. of superphosphate might be allowed, but no one should apply the 8 or 10 cwt. per acre of artificials sometimes used in addition to farmyard manure, unless he has very good reason to expect an adequate return.

Mangolds present rather a different case as they more definitely respond to fertilisers than Swedes or Turnips; indeed no crop is grown that responds so clearly. In most cases it is advantageous to supply a complete dressing; a useful one would be 1 to 1½ cwt. of sulphate of ammonia, 2½ cwt. of superphosphate, and 2½ cwt. of salt per acre in addition to dung.

Potatos also respond to dressings of artificial fertilisers, though it is by no means clear that they justify the heavy dressings sometimes given. In Potato-growing districts it is not unusual to apply 10 cwt. of artificials. In peace time, or when there is an abundance of fertilisers, there is not much to be said against this plan, and the possibility of increased crops may justify it; but in war-time, when fertilisers are scarce, it becomes absolutely necessary to economise, and large dressings should not be given unless there is definite evidence that they are needed by the crop.

TRADE NOTES.

NURSERY WORKERS' CLUB.

STEPS have been taken to form a social and recreation club for workers in nursery and market gardens in the Hampton, Middlesex, district. There are several hundreds of such gardens in and around Hampton, employing a large number of workers. A provisional committee has been formed with Mr. J. Quarntrill as chairman, Mr. R. O'Callaghan vice-chairman, Mr. F. J. Cane treasurer, and Mr. F. White as secretary, and an appeal is being made for funds to "equip and maintain the club, which has been instituted with the object of providing opportunities for reasonable recreation, of social intercourse, and of mental and physical development." It is hoped to make a useful, up-to-date club fitted for billiards and other indoor games, with reading room and library, and to institute "sub clubs" for cricket, swimming, etc. The club is to be entirely non-sectarian and non-political, and the committee will make every endeavour to enlist the sympathy and co-operation of the employers. There is a special desire to make life more pleasant and happy for the hundreds of nursery hands who are soon expected back from the various theatres of war.

MARKETS.

COVENT GARDEN, November 27.

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

(All 48's, per doz. except where otherwise stated).

	s. d.	s. d.
Aralias	7 0- 9 0	
Asparagus plumosus	10 0-12 0	
— Sprengeri ...	9 0-10 0	
Aspidistra, green ...	30 0-60 0	
Begonia Gloire de Lorraine ...	18 0-30 0	
Chrysanthemums ...	12 0-30 0	
Erica gracilis ...	18 0-24 0	
— nivalis ...	24 0-36 0	
Marguerites, white	12 0-18 0	
Solanums	12 0-18 0	

Ferns and Palms: Average Wholesale Prices.

	s. d.	s. d.
Adiantum cuneatum, 48's, per doz.	10 0-12 0	
— elegans ...	9 0-10 0	
Asplenium, 48's, per doz.	10 0-15 0	
— 32's	21 0-24 0	
— nidus, 48's ...	10 0-12 0	
Cyrtomium, 48's ...	10 0-12 0	
Nephrolepis, in variety, 48's ...	12 0-18 0	
— 32's	24 0-36 0	
Pteris, in variety, 48's	9 0-12 0	
— large 60's ...	4 0- 5 0	
— small 60's ...	3 0- 3 6	
— 72's, per tray of 16's	2 0- 2 6	

Cut Flowers, &c.: Average Wholesale Prices

	s. d.	s. d.
Arums—		
— (Richardias), per doz. bl'ms.	18 0-24 0	
Bouvardia, white, per doz. bun. ...	24 0-30 0	
Carnations, per doz.		
— blooms, best American var.	6 0- 9 0	
Chrysanthemums, per doz blooms—		
— white	6 0-10 0	
— yellow	5 0- 8 0	
— pink	5 0- 8 0	
— bronze... ...	6 0- 9 0	
— per doz. bun.—		
— white	48 0-60 0	
— coloured ...	18 0-36 0	
Croton leaves, per bun.	1 6- 2 0	
Gardenias, per box (12's)	9 0-10 0	
— (18's)	6 0- 8 0	
Heather, white, per doz. bun....	6 0 10 0	
Honesty, per bun.	1 9- 2 6	
Lapageria, white, per doz.	6 0- 7 0	
Lilium longiflorum, long ...	30 0 —	
Lily-of-the-Valley, per bun. ...	6 0- 8 0	
Orchids, per doz.;—		
— Cattleyas ...	18 0-24 0	
— Cypripediums,	4 0- 6 0	
— Odontoglossums	3 6- 4 0	
Pancratiums, white ...	6 0- 8 0	
Pelargonium, double scarlet, per doz. bunches ...	6 0-10 0	
— white, per doz. bunches ...	10 0-12 0	
Roses, per doz. blooms—		
— Ladylove ...	7 0-10 0	
— Liberty ...	9 0-12 0	
— Madame Abel Chatenay ...	6 0- 9 0	
— Niphetos ...	5 0 —	
— Richmond ...	8 0-10 0	
— Sunburst ...	6 0- 8 0	
Violets, single, per doz bun. ...	6 0 12 0	

REMARKS.—The supplies and prices of flowers show little change from those of last week. Roses are becoming fewer, and prices are advancing, especially for good red sorts. A limited number of Poinsettias are now being offered in excellent condition. Small consignments are arriving from Guernsey, consisting chiefly of yellow Soleil d'Or and paper white Narcissi, and Violets. Smilax is also arriving from this quarter in larger quantities. A few pads of paper-white Narcissus and Parma Violets arrived from France last week in fairly good condition; 10d. and 1s. per bunch being realised for Paper-Whites. A few Roman Hyacinths, on bulbs, were offered for sale this week. Camellias are now offered for sale in boxes, consisting of 12 to 18 blooms, according to size.

Fruit: Average Wholesale Prices.

	s. d.	s. d.
Grapes:—		
— Almerias, per barrel (about 34 doz. lbs.)	85 0-130 0	
— Alicante, per lb.	8 0- 5 0	
— Gros Colmar, per lb.	3 6- 6 0	
— Muscats, per lb.	8 0-12 0	
Nuts:—		
— Almonds, per cwt.	260 0 —	
— Barcelona, per cwt ...	240 0 —	
— Brazils (new), per cwt ...	280 0 —	
— Cobnuts, per lb.	1 6- 1 8	
— — Messina, per bag ...	115 0 —	
Walnuts, kiln dried, per cwt.	210 0	

Vegetables: Average Wholesale Prices.

	s. d.	s. d.
Artichokes, Jerusalem, per ½ bus.	2 6- 3 0	
Asparagus, Paris Green, per bundle	15 0 —	
— — Sprue, per bundle ...	1 9- 2 0	
Beans, French, per lb.	1 8- 2 0	
Beetroot, per bus.	4 0- 5 0	
Brussels Sprouts, per bus. ...	5 0- 6 0	
Cabbage, per tally	8 0-12 0	
Carrots, per bag	10 0-12 0	
Cauliflowers, per doz	3 6- 5 0	
Celery, per doz.	2 0- 4 0	
Cucumbers, per doz	18 0-24 0	
Endive, per doz. ...	1 6- 2 0	
Garlic, per lb. ...	0 6- 0 8	
Greens, per bag	2 6- 4 0	
Herbs, per doz bun.	2 0- 4 0	
Horseradish per bun	3 6- 5 0	
Leeks, per doz bun.	3 0- 6 0	
Lettuce, Cabbage and Cos per doz	1 0- 1 6	
Mint, per doz. bun.	4 0- 6 0	
Mushrooms, per lb.	4 0- 5 0	
Mustard and Cress, per doz punnets	1 0- 1 3	
Onions, spring, per doz. bun. ...	2 0- 4 0	
Parsley, per bunch	0 4- 0 6	
Parsnips, per bag ...	8 0- 9 0	
Radishes, per doz. bunches ...	1 6- 2 0	
Savoys, per doz ...	2 6- 3 6	
Shallots, per lb. ...	0 6- 0	
Spinach, per bus. ...	2 0- 3	
Tomatos, per doz lb. ...	1 8-2 4 0	
Turnips, per bag ...	6 0- 8 0	
Watercress, per doz	0 8- 0 10	

REMARKS.—Supplies of Muscat Grapes are limited, but Gros Colmar and Alicante are fairly plentiful, while Almerias are offered in barrels containing about 42lbs. of dessert Apples a few good Cox's Orange Pippins reach the market; cooking varieties consist of Wellington (Dumelow's Seedling) Bramley's Seedling, Newton Wonder, Dr Harvey, and a few others. French Asparagus is coming in, but Tomatos and Cucumbers are both in limited supply, while Dwarf Beans are not so plentiful this week. Green vegetables are fairly plentiful for the time of year.—*E. H. R., Covent Garden Market, November 27, 1918.*

ANSWERS TO CORRESPONDENTS.

AMERICAN GREASE FOR GREASE-BANDING FRUIT TREES: *P. H.* For supplies of American grease for grease-banding fruit trees without the use of paper, application should be made to the horticultural sundriesmen whose names and addresses are to be found in our advertisement columns.

DICTIONARY OF BOTANICAL AND HORTICULTURAL TERMS IN VARIOUS LANGUAGES: *A. G. N.* In 1894 a dictionary of the principal terms employed in botany and horticulture, set out in the Latin, French, English, German, and Dutch languages, by "A. M. C. Jongkindt Coinck, Horticulteur, à Bussum, près d'Amsterdam (Pays Bas)," was published in Haarlem by Les Héritiers Loosjes, in Antwerp by La Librairie Néerlandaise, and in London, Paris, and Leipsic by La Libraire Nilsson.

DISEASED CALANTHE PSEUDO-BULBS: *L. D.* Calanthes are very liable to physiological disorder if the temperature of the house in which the plants are grown falls low during the period just previous to the completion of the pseudo-bulbs. In such conditions the pseudo-bulbs become spotted, and sometimes have considerable areas of blackened or dull grey tissue that denote bad health. Low temperature is the chief cause of this trouble, but the pseudo-bulbs may become similarly affected if liquid manure is used at too great a strength, whilst if an excess of water is applied to the roots concurrently with a low temperature the trouble is greatly aggravated.

HARDY PERENNIAL FLOWERS FOR LARGE BEDS: *J. R.* Kniphofias are excellent subjects for planting with Yuccas, such as Y. recurva and Y. flaccida. A few of the best Kniphofias are Saundersii, orange-scarlet; Burchellii, orange-scarlet; Lachesis, dark yellow; Obelisque, chrome-yellow; and Lemon Queen. Of smaller-growing species K. rufa is one of the best flowering, as it blooms all the season. Sedum spectabile makes a fine bed for autumn, and a spring display is assured by interplanting with a Narcissus such as Emperor or Empress. Another effective bed may be had by planting Achillea filipendulina, with Trollius (Globe flower) for a spring display. A large bed of Nepeta Mussinii planted with Darwin Tulips, such as Clara Butt, is very effective when the plants are in bloom. The Nepeta is also very suitable for planting with Lilium longiflorum; the chief objection to this combination is the fact that the Lilium needs to be renewed every year, but Lilium testaceum might be used instead. A large bed of Nepeta and the common pink Monthly Rose is always much admired, or there is a variety of the Monthly Rose called Hermora which might be used. Monthly Roses interplanted with Lavender are pleasing all through the season, especially if Lilium candidum is grouped with them. Anemone japonica alba var. Whirlwind and Lilium Hansonii make a useful bed, while the Rose-coloured Anemone Queen Charlotte might be planted with Hyacinthus candicans. This Hyacinthus is useful for planting with a number of hardy herbaceous plants; it gives a good succession interplanted with Delphiniums or Anchusa italica var. Dropmore. It can also be used with herbaceous Paeonies, and with them Narcissi can also be used; they are very effective with the bright-coloured young growths of the Paeonies. Thus one may have three distinct floral displays from one bed, and all hardy plants. Gladioli may be used instead of Hyacinthus. A very large bed can be rendered effective by planting Salvia virgata, with an edging of Santolina Chamaecyparissus (Lavender Cotton), or the smaller Santolina incana may be used. Salvia virgata interplanted or edged with Artemisia ludoviciana var. guaphaloides also proves very effective. Cerastium tomentosum can also be used. Another combination which gives a lasting display is Eryngium planum and Campanula persicifolia, or Campanula carpatica may be used in the same way. Campanula persicifolia var. alba could be interplanted with Geum Mrs Bradshaw, or a good variety of Chrysanthemum maximum might be used instead. The beautiful white Phlox, F. A. Buchner, with a groundwork of Potentilla Gibson's Scarlet, makes a good bed, or Geum Mrs. Bradshaw might be substituted for the Potentilla. Erigeron Quakeress, lavender-blue, and E. B. Ladhams, pink, are two splendid border plants which flower all the season. Some of the strong-growing Phloxes could be used; Iris and Le Mahdi, of bluish-violet colouring, are best grouped with white flowers, in a partially shaded position. In furnishing beds of this character more frequent use should be made of hardy herbaceous plants with large, handsome foliage. Acanthus mollis, A. latifolius, A. spinosus, and Bocconia cordata have imposing foliage, while all the Funkias can be used with good effect, either alone or as edgings to beds of taller-growing plants. The large-leaved Saxifraga cordifolia is another plant suitable for the same purpose. For a spring display plant Anemone apennina, Muscaries, Scillas, and Chionodoxas, which die down and take no harm when overplanted later in the season.

INSECTS ON PEAR TREE: *C. G.* The insects are "Beetle Mites" (Oribatidae). They eat the green algae, moss, and other foreign growth on the bark, and are thus beneficial. The Pear tree would be benefited by the application of a caustic winter wash.

NAMES OF FRUITS: *T. E. T.* 1, Winter Hawthornden; 2, Round Winter Nonsuch; 3, Hormead Pearmain; 4, Gascoyne's Scarlet; 5, Wealthy; 6, Calville St Sauveur; 7, Flanders Pippin; 8, Egremont Russet.—*R. B. Hessle, S. W. W.* 1, New Bess Pool; 2, King of the Pippins.—*G. E.* (a) Radford Beauty, (b) not recognised, (c) Cockle Pippin.—*C. C. P.* Lady Henniker.—*L. C.* 1, King of the Pippins; 2, Tower of Glammis; 3, Mère de Ménage; 4, Hanwell Souring; 5, Emperor Alexander; 6, decayed, not recognisable; 7, Marie Louise.—*C. H.* The Apple is evidently a seedling, and probably has no name; the specimens received were very poor, both in size and quality, and if they are representative fruits the variety is not worth growing or naming.—*T. S. and Son* 1, Annie Elizabeth; 2, Baumann's Red Winter Reinette.—*J. O.* Apple not recognised.—*D. W.* Hambledon Deux Ans.—*J. H. J.* Gascoyne's Seedling.

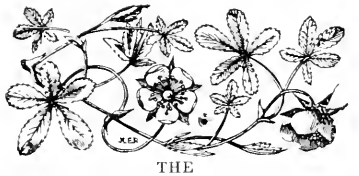
NAMES OF PLANTS: *G. E.* Gazania rigens.—*F. E. W.* 1, Cycas revoluta; 2, Lomaria spicant; 3, Sempervivum arachnoideum.—*C. H.* 1, Justicia carnea; 2, Pyrus Aria; 3, Phormium tenax; 4, Leycesteria formosa; 5, Peperomia marmorata.—*C. I. W. Bucks.* 1, Pieris japonica var. variegata; 2, Skimmia Laureola; 3, Euonymus radicans var. Carrièrei; 4, Cupressus pisifera var. plumosa albo-variegata; 5, Cedrus atlantica var. glauca; 6, Elaeagnus pungens var. Simonii.—*T. J., Portobello* There are no features in the flower of Odontoglossum sent to distinguish it from a blotched form of O. crispum. If it is a hybrid it may be a variety of O. eximium (crispum × ardentissimum) reverted to the O. crispum parent.

PARSNIP WITH BROWN MARKINGS: *Herring.* The primary cause of this disease is the so-called "Parsnip Canker," which is not caused by any organism, but is "physiological." Late sowing is recommended, and liming; also the application of 5-10 cwt. of salt to each acre.

RED SHALLOTS: *C. F.* The bulbs sent represent the Jersey or Giant Russian variety of Shallot. This form is easily recognisable by its coppery-red skin and the pale violet colour of the bulbs immediately underneath the outer skin. Potato Onions are quite different.

VIOLET MR D. LLOYD GEORGE: *M. E. B.* The new Violet named Mr D. Lloyd George, and illustrated on p. 199 of the *Gard. Chron.* of the 16th inst., was exhibited by Mr. J. J. Kettle, Corfe Mullen, Wimborne.

Communications Received.—F. M.—E. B.—I. P. B.—J. M. E. M. H.—A. C.—F. L. B.—J. P.—J. B. Mrs. de R.—C. T.—J. J. F.—C. B.—W. R.—H. F.—L. E. M.—J. C. W.—W. L.—E. T. E.—A. D. W. G. B.—G. T.—T. I.—W. H. D.—E. H. M.—D. T., Dunedin—G. McG.—H. P.



THE

Gardeners' Chronicle

No. 1667.—SATURDAY, DECEMBER ..., 1918.

CONTENTS.

ILLUSTRATIONS.

NOTES FROM KEW.—XI.*

THE best of gardens have a more or less unkempt, deshabille appearance in November. Evidences of decay and death are everywhere, and it requires a cheerful mind to find pleasure in a walk through Kew when the dead leaves are littered over the lawns and paths, and beds and borders are disfigured by withered decaying stems. Yet things are not so bad as they look, as Philander Spratt would say. The dead leaves, if allowed to lie, enrich the borders, and it is astonishing how many of them are dragged into the soil by worms unless in a spirit of tidiness the broom is kept constantly at work. It is a mistake, and worse, laboriously to remove dead leaves as fast as they fall. The wind will gather them together from the open spaces and distribute most of them among the shrubs and beds, where they will serve as protection in winter and as a mulch in summer. It is Nature's way of restoring to the soil much of what was taken out of it by the roots, and some of what was taken in from the atmosphere by the leaves when they were green and active.

The rich brown colour of dead leaves of Beech and Oak, the yellow of Maple and Poplar, and the various other shades assumed by deciduous leaves in autumn are not without charm as they lie on the lawns. Of course, they suggest the end of the year, the break up, the moult of vegetation; still, they form an important part of the scheme of plant life, and therefore need not be objected to, much less give rise to feelings of despair.

Hundreds of loads of leaves are being collected now at Kew. They are wanted for leaf mould, which is to loam, as the gardener thinks, what butter is to bread. Properly prepared, leaf mould is good food for many plants. But it must be properly prepared, or it may disagree with them. Eelworm, the most troublesome of all soil evils, is often abundant in leaf-mould. At Kew, nowadays, no soil is safe, for pot plants at any rate, until it has been sterilised by steaming—a laborious operation, but necessary if the plants are to grow satisfactorily. Steaming for eelworm and sulphur-vapouring for mite were unknown forty years ago. These two pests have come among us as silver leaf and American blight have. There is need of a simple machine for soil sterilising, for it looks as though one will be as necessary in the garden as a lawn mower is.

Leaf-mould, finely sifted and mixed with sand, is used at Kew as a winter dressing for the plants in the rock garden. The old soil is loosened with a hand-fork, and half an inch or so of this mixture is spread. We cannot provide a covering of snow, which the plants get in the mountains in winter, so light leaf-mould serves as a substitute. Rain, fog, and frost have stopped growth and cut off the foliage of many things. Only two Alpines have held on—the lovely Gentiana sino-ornata, one of the very best of the many herbaceous plants recently introduced from China, and Primula capitata. These two were boldly in flower in mid November, after holding out against several frosty nights. The only plant in flower in the herbaceous garden is Helleborus caucasicus (viridis), which is green flowered and not showy.

On the walls the ever welcome yellow Jasminum nudiflorum and the fragrant Lonicera Standishii (see fig. 89) are the only two plants in flower. Berberis Wilsonae promises to be as useful as a berry plant for Christmas decorations as Holly is. For all practical purposes B. Stapfiana and B. subcaulialata may be considered seedling varieties of B. Wilsonae, which is evidently a variable plant. Someone has suggested that it is a natural hybrid, as its seedlings vary so. Be that as it may, B. Wilsonae is a most decorative hardy shrub, its great time being early winter, provided the birds do not strip it of its bright scarlet berries. Next to it in value as a berry plant is our own B. vulgaris, neglected of gardeners, yet a champion shrub. A month ago it was the most attractive of all Barberris in the Dell at Kew.

There is beauty in the stems of some plants in winter. We all love the Birches, two of the best of which are the American red Birch, Betula nigra, and the Japanese B. Ermanii, the former with shaggy stems, owing to the brown bark hanging in large, loose flakes, and the latter silvery barked. Both trees are of elegant habit. The shiny black twigs and small branches of Birches are effective when they are leafless. Sargent says the bark of Birches is impervious to water, hence its use for roofing and for shoes, canoes, and boxes.

The red and yellow barked Willows are well known, and so are the white stemmed Brambles, Rubus leucodermis, R. coreanus, R. tibetanus, R. biflorus, and R. Veitchianus. To these may be added, on account of its shining crimson stems, R. No. 11, which Kew obtained from Mr. J. C. Williams. It is, no doubt, Chinese, yet it differs from all other Chinese brambles in its pinnate, rugose leaves, which are silvery on the under side, and in the character of its sturdy stems, which are about 6 feet long, suberect, and very spinous. Another of Mr. Williams' gifts to Kew is an Acer, said to grow 50 to 60 feet high, with cordate leaves, red petioles, and the trunk and main branches brown purple, prettily reticulated with white.

If someone would introduce a new tree—it might be as large and noble as the Douglas Fir—there is a good name waiting for it—Georgia Wilsoniana,* and it could be planted throughout the country to commemorate the end of the world's war and the services of the two great leaders. An avenue of it might be made at Kew, where one ought to have been made of Wellingtonia. Writing of avenues, that of the Irish Yew, near the Pagoda (see fig. 90) has not grown appreciably in the last forty years. Peter Pan like, the Irish Yew will never grow up. Ilex verticillata, the American Winterberry, is a good garden shrub, as it has showy bright red berries, which hang on after the leaves fall in autumn. It grows about 6 feet high, and is of spreading, rather close habit. Pyracantha Gibbsii, recently awarded the R.H.S. First Class Certificate, is surely P. crenulata. Mention should be made of the Spindle trees, which this year have fruited exceptionally well; but the birds soon spoil them, as they do the Pyracanthas, and, indeed, all berry bearers at Kew. It is worth while, perhaps, to have a bird sanctuary, which Kew proudly is, but the birds exact a heavy toll. Numbers of jays and of the lovely green woodpecker are now to be seen in the neighbourhood of the lake, where the geese are.

In the plant houses there is not much that is noteworthy. No. 1 is bright with Chrysanthemums, Begonias, a beautiful lot of the winter flowering race of Veitchian origin; Jacobinia chrysostephana, with orange and yellow heads of flowers, suggestive of Chrysanthemums; Calceolaria Burbidgei, a first rate pot shrub for winter flowering; Eustoma Russelliana, Columnea magnifica, Tibouchina semidecandra, Heeria rosea, Abutilon insigne, and a large selection of the more familiar winter flowering plants.

Diospyros Kaki, in No. 5, is carrying a good crop of big, Tomato-like fruits which will hang on the tree till about March. For a wonder there is not an Agave in flower at Kew. Solandra grandiflora, a big climber which sprawls over the tree Euphorbias, is well budded, and will give a show of large yellow trumpets about Christmas. In the Orchid houses Cymbidium Traceyanum is a great attraction owing to its powerful Vanilla-like fragrance as much as to floral beauty. What is the origin of this fine Orchid? The suggestion has been made that it is a natural hybrid between C. giganteum and

* Previous articles appeared in the issues of January 19, February 9, March 9, April 6, May 18, June 8, July 6, August 10, September 21, and November 2.

* Dahlia has been called Georgia.—Eds.

C. grandiflorum. The cross might be made artificially if this has not already been done. Hooker did not recognise the plant as a species in his *Flora of British India*. It first appeared in 1890 among a batch of imported C. Lowianum in the nursery of the late Mr. H. A. Tracey, at Twickenham. There is a good show of Cattleya bloom, a poor one of Odontoglossum, and a fair one of Cypripedium, the largest of which is Ypres and the prettiest San Actaeus. The Queen Laelia anceps and its allies are fast coming into flower, and there will soon be a grand lot of Calanthes, the plants having grown exceptionally well this year. Arachnanthe Clarkei is in flower.

Is Orchid spot amenable to any known treatment? The late George Mussee, who examined many diseased Orchids, maintained that spot was due to defective cultural conditions. "It does not require the attention of a plant pathologist, but of a careful gardener, who has some sense of proportion with respect to heat and moisture. For spot is due to either too high a temperature, too much water, bad ventilation, or watering or spraying at the wrong time." When a well-known clever cultivator, who had a visitation of spot among his Orchids, was told this, he retorted that "such information is absolutely and utterly valueless to growers who ask for help from science. My treatment of Orchids is well known, and those who say it is defective had better come and see them and point out what is wrong." The disease comes and goes mysteriously. It is a great deal too much in evidence at Kew now, and there are other collections in the country that are afflicted in the same way. The late Professor Marshall Ward maintained that the disease was "certainly not fungoid," and Mr. W. B. Brierley, who recently examined a number of spot diseased Orchids, said "the blotches are not due to any pathogenic organism but to the deposition in the cells of an indigo-like body, and the subsequent death of the immediate tissues." This suggests poisoning, probably atmospheric, for which preventive measures are not easily devised. The trouble appears to be most frequent in collections in or near large towns. Certainly many plants at Kew suffer from atmospheric poisoning. Odontoglossums and Pelargoniums notoriously do, and the Rhododendrons make comparatively undersized leaves, probably for the same reason. It is easy to say treat the plants better, but as the irate correspondent mentioned above replied, in what respect is the treatment wrong? W. W.

FIG. 89.—LONICERA STANDISHII: FLOWERS CREAMY WHITE.
(See p. 223.)

ORCHID NOTES AND GLEANINGS.

NEW HYBRIDS.

BRASSO-CATTLEYA PEARL.—A flower of this delicately-tinted cross between B.-C. Digbyano-Schroderae alba and C. intermedia alba is sent by Frederick J. Hanbury, Esq., Brockhurst, East Grinstead. The lanceolate sepals and petals are white tinged with lavender colour. The lip also is white with lavender-tinted front, which is lightly veined with rose colour.

LAELIO-CATTLEYA RUFUS.—This hybrid between C. Dowiana aurea and L.-C. Amazone (L. purpurata × C. maxima) is also sent by Mr. Hanbury. It is a showy cross, notwithstanding that the sepals and petals are narrow. Their colour is apricot-yellow tinged with rose. The lip, which in the tubular arrangement of the base discloses C. maxima, is well expanded and crimped at the margin: the centre is reddish crimson changing to violet towards the margin. The base has a series of closely-arranged thin gold lines.

SOPHRO-CATTLEYA GWENDOLINE.—We have received a flower of this variety from J. Ansaldo, Esq., Rosebank, Mumbles. It was raised between Cattleya Octave Doin (Dowiana aurea × Mendelii) and S.-C. Wellesleyae (S. grandiflora × C. labiata). The flower is the first to develop, and the mature plant should prove a pretty and distinct hybrid. The segments are of good substance and coloured light yellow; the lip, which has a cherry-red band in front, is darker than the other segments.

CYPRIPEDIUM PEACE.

A FLOWER of this pretty and new hybrid between C. Psyche (bellatulum × niveum) and C. Lathamianum (Spicerianum × villosum) is sent by Mr. F. C. Puddle, gardener to W. H. St. Quintin, Esq., Scampston Hall, Rillington, Yorkshire, whose efforts in crossing C. niveum have added to our collection many pretty hybrids with C. niveum features, but enlarged in size.

The present variety adheres closely to C. Psyche in its pure white ground and effective display of numerous, closely-arranged violet spots on the upper sepals and petals. In the form of the flower, the upper sepal of which is 2 inches wide, and petals 1⅞ inch across, C. bellatulum is strongly in evidence. C. Lathamianum—which was raised by Mr. W. B. Latham, at the Botanic Garden, Birmingham, and first flowered as long ago as the spring of 1888—is difficult to trace in it except in the form of the lip, which has a pallid, yellowish tint. The connate lower sepals are strongly concave, forming a shallow cup behind the lip, white, and unusually large for flowers of this class.

SOME OF THE NEWER ROSES.

(*Continued from p.* 214).

ROSES INTRODUCED IN 1914.

CANDEUR LYONNAISE (Croibier).—A very fine white Hybrid Perpetual Rose, in the way of Snow Queen, but larger, fuller, and more globular; a strong grower and hardy.

The following are Hybrid Teas:—

AUGUSTUS HARTMANN (B. R. Cant).—One of the best Roses in existence. A bright Geranium-red; fine shape and petal, full, holds its head up well, and at its best is a marvellous colour. Large and free. My favourite among red Roses.

AUTUMN TINTS (B. R. Cant).—A lovely combination of orange-copper and red, very free; of medium size and a fine bedder.

BRILLIANT (Hugh Dickson).—A Rose of wonderful colour; brilliant scarlet; occasionally full, but usually only fairly full. It has not grown well here as a dwarf, but I have only had it one season, budded on half-standards. In one nursery I saw an astonishingly fine bloom of it.

COLLEEN (McGredy).—This has beautiful rose-coloured blooms, of a distinct shade, on a yellowish ground; full and pointed; a good Rose and a fair grower.

COUNTESS CLANWILLIAM (Hugh Dickson).—No Rose in my garden receives more admiration than this. It is described as peach-pink shaded and edged with cherry red, and so it often is. I have had it with a yellow base rather than peach, and a friend and I discuss which form is the more beautiful. Of fair size, lovely shape, fairly full, a fair grower, and most fascinating.

EDGAR M. BURNETT (McGredy).—A full, large Rose, rather of the La France colouring; good grower, free, and suitable either for show or garden purposes.

FLORENCE FORRESTER (McGredy).—A grand flower, with a slight lemon tinge that fades to pure white; large, very full, and free. Its fault is that it is rather a stumpy grower, and so free flowering it can hardly manage to make enough growth.

H. V. MACHIN (Alex. Dickson).—Another grand Rose, with a stumpy habit of growth. The bloom is scarlet-crimson, shaded black; very large and very full. Unsurpassed for exhibition. It holds up its heavy blooms perfectly. Would that it were a better grower!

IONA HERDMAN (McGredy).—A lovely orange-coloured garden Rose, but though free it does not do well everywhere. It may prove hardier and more vigorous with time.

KILLARNEY BRILLIANT (Alex. Dickson).—A richer and deeper Killarney, and here not so subject to mildew so far. The colour at its best is very striking; free and vigorous.

MAJESTIC (W. Paul).—A fine, large Rose, carmine-rose; fairly full, and suited either for bedding or show purposes.

MRS. AMBROSE RICARDO (McGredy).—One of my favourites; a lovely Rose, full, opens well, and has blooms of great size; honey-yellow in colour and in style suggesting Mrs. Vanderbilt, but of different colour. Vigorous and free. Strongly recommended.

MRS. ARCHIE GRAY (Hugh Dickson).—A good pale yellow variety, of fine size and shape, and fairly full. A charming Rose.

MRS. CHARLES REED (Hicks).—Another good pale yellow variety, a good garden Rose, and occasionally up to show form.

MRS. CHARLES RUSSELL (Wahan Conservatories).—A very fine Rose; rosy-carmine with a red centre; full, and a good grower, but the colour goes wrong in some weather conditions. Grandly shown in many stands two years ago.

MRS. GEORGE NORWOOD (Hicks).—A very fine pink Rose, of good size and fine shape, full, free, and very good. Its fault is that it is among the rather stumpy growers.

MRS. JAMES LYNAS (H. Dickson).—Another fine Rose, in the style of Pharisäer and Ethel

Malcolm. In growth probably between the two; fine in size and shape, fairly full, and very delicate in colour.

MRS. WEMYSS QUIN (A. Dickson).—Quite one of the best of the new yellow Roses, a fairly strong grower, deep rich orange yellow in colour; free from mildew, and a most useful garden variety.

NAARDEN (Van Rasen).—A good and nearly white Rose, tinged towards the centre; large and free, but hardly distinct enough, as we have many more or less similar.

RED LETTER DAY (A. Dickson).—A finely coloured and all but single Rose; rich crimson, a good grower, free, and among the best of its class.

WILLIAM COOPER (H. Dickson).—A lake red; large, free, fair in shape, and moderately full. Good in autumn, and a good garden Rose.

OTHER ROSES OF 1914

LADY PLYMOUTH (A. Dickson).—An all-round fine Rose, and really good; large, of fine shape, pale yellow, and a quite good grower. One of the best of modern Teas.

MRS. CAMPBELL HALL (D. Campbell Hall and A. Dickson).—An exceptionally beautiful Tea Rose, quite distinct, and very fine in shape; a good grower on half standards, extraordinarily free; said to be delicate in some places, but so far it has not been so here. A great acquisition.

MRS. S. T. WRIGHT (A. Dickson).—A deeply coloured sport from Harry Kirk, perhaps not quite so strong a grower, and buds does not take easily when budded. It is of a lovely colour, gold, shaded inside with rose; at times it has been deep orange. I strongly recommend this Rose.

DOLLY VARDEN (G. Paul).—An interesting break, as it is a perpetual rugosa; lively salmon pink, with yellow base, good size, not very full, growth 3 feet to 4 feet, an excellent garden Rose.

SHALIMAR (Bartell).—Blush often edged with rose, a distinct and good Wichuraiana Rose, and so far as I can at present judge a quite good grower; certainly very pretty. A sport from Minnehaha.

CLIMBING MELANIE SOUPERT (Bartell).—This climbing H.T. promises to prove a great gain, as the blooms are like those of the ordinary form from which it sported, but even better.

GEISHA (Geschwind).—This I have not grown myself, but it gives promise of being one of the best scarlet-crimson climbers, with large flowers, and very free.

WHITE RAMBLER (Pemberton).—A decidedly valuable Rose, as it is consistent in colour, does not become mildewed, and has a long period of flowering.

ROSES INTRODUCED IN 1915

ANNIE CRAWFORD (D. Campbell Hall).—A fine pale pink Hybrid Perpetual; a stronger, paler Mrs. J. Laing, of upright growth, free, and decidedly good. Does not go wrong in colour as Mrs. J. Laing so often does.

LOUISE CRETTE (Chambard).—This Hybrid Perpetual Rose seems to be an improved Frau Karl Druschki, with growth more like that fine Rose Couleur Lyonnaise. I shall be much disappointed if it does not prove very nearly our best white variety.

The following are Hybrid Tea varieties:—

ADMIRAL WARD (Pernet-Ducher).—Crimson shaded purplish, large and full; rather too globular for present taste, free, and of spreading growth; fairly vigorous; good.

CHEERFUL (McGredy).—A lovely Rose, very distinct, and a great advance if it proves vigorous enough. No Rose in my garden has received more admiration from ladies than this. It is one of the "orange flame" sort, distinct in colour, full, and of fine shape. It might have greater length of petal, but it opens easily, and at once catches the eye.

EDWARD BOHANE (A. Dickson).—A fine scarlet show Rose, holding its head up well; large, of finely imbricated shape, free and vigorous.

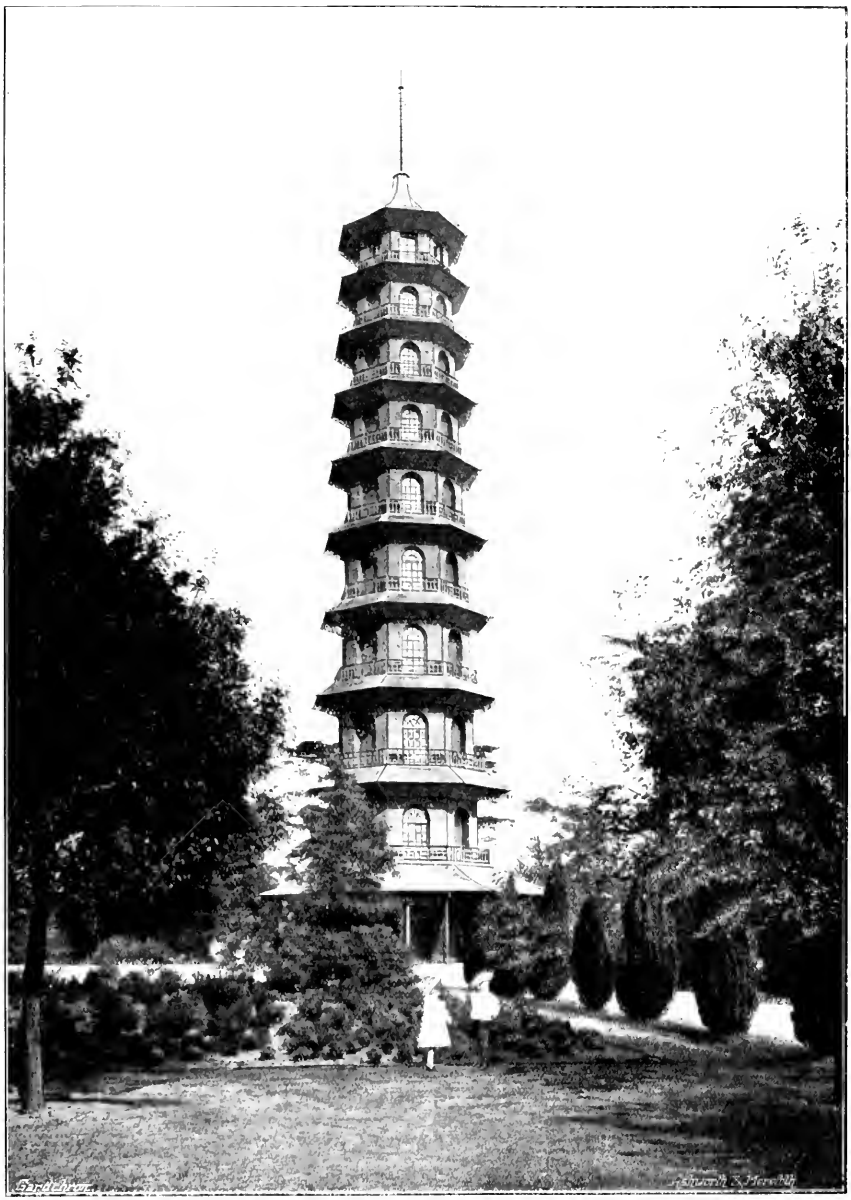


FIG. 90.—PAGODA IN KEW GARDENS, SHOWING THE IRISH YEWS IN THE YEW AVENUE (See p. 234).

G. AMEDEE HAMMOND (A. Dickson).—A medium grower, of fair size, and described in the N.R.S. Catalogue as apricot in colour, but with me, so far, it has not been so deep a yellow.

GOLDEN MEYER (G. Paul).—A golden sport from the well-known Edu Meyer, free, and a fine garden Rose.

HOOSIER BEAUTY (Dorner, not Hoosier B.).—A fine crimson Rose, of good shape, fairly full, and a free, good grower; its main fault seems to be its "whippy," thin wood.

GORGEOUS (H. Dickson).—This I consider one of the very finest Roses of late years, and bound to be included among the best. Its colour is orange, shaded copper; it has large, quite full blooms that open well and are of fine shape. Holds its head up, lasts well, and grows freely.

JANET (A. Dickson).—Described as a dwarf Gloire de Dijon, but this, I think, hardly does it justice. It is free, a good grower, yellow in colour, sometimes with a salmon shading, large, well formed, and holds its head up. Very thorny.

LADY BOWATER (W. Easlea).—A large, full bloom, white, sometimes shaded apricot; has sturdy wood, holds its head up, and is a medium grower.

MADME. COLETTE MARTINET (Pernet-Ducher).—A fine garden Rose, yellow, old gold and orange; of fair size, vigorous, globular, and good.

MARGARET DICKSON HAMILL (A. Dickson).—A real acquisition. A lovely deep yellow Rose tinted at the back with carmine. Blooms of good size; free, a good grower, and distinct. It is inclined to hang its head, but its blooms catch the eye at once, and deservedly so.

MRS. ARCHIBALD MACKEY (Hicks).—A fine deep pink, described as a larger and deeper Mrs. W. J. Grant. Likely to be a fine Rose for exhibition and also in the garden.

MRS. BERTRAM J. WALKER (H. Dickson).—A Rose I greatly like. Deep bright rosy-pink, of fine shape, quite full, but opens well; free, a big, fine Rose, and the habit is good in every respect.

MRS. FRANKLIN DENNISON (McGredy).—Creamy-white, but I had one bloom in the autumn a real yellow; makes good growth, and is very free. The blooms are pointed, here not extravagantly large, and so far it has not always opened well in this climate. But we had many mists the last two summers, and it may do better.

MRS. HUGH DICKSON (H. Dickson).—A finely-formed flower, creamy, with orange shading; very beautiful, free, of good size, and fairly vigorous.

MRS. MACKELLAR (A. Dickson).—Pale primrose, shading to a deeper hue towards the centre; of fine shape, vigorous, and an upright grower, holding its large blooms up well.

MRS. MAUD DAWSON (A. Dickson).—A good Rose, red, a fine grower, and very useful, though perhaps a trifle loose. The first blooms disappointed me, but the weather was probably the cause, as within a few good days it was much better.

SALLIE (B. Cant).—A good grower, rather in the style of St. Helena; creamy pink, deepening towards the centre, and touched with yellow. A good garden Rose, and said to be mildew-proof.

SOUVENIR OF HENRY GRAHAM (A. Dickson).—A well shaped Rose, of very delicate colouring, creamy, shaded with carmine; large, free, and fairly vigorous; very pretty. *L. C. R. Norris-Elye, Utterby Manor, Louth, Lincolnshire.*

(To be continued.)

POTATO BREEDING.

MR. ARTHUR W. SUTTON, in his paper on variation in the Potato, has shown that the evidence for the origin of a variety by mutation is far too scanty and lacking in scientific accuracy to warrant the belief that any of our domestic forms have originated in such a way from some pre-existing type.

Another point of interest, particularly to the Potato breeder, lies in the similarity of many of the varieties now upon the market, and the suggestion put forward that such similar or identical forms may represent the individual selection of different breeders from batches of seedlings, raised from parents of possibly widely different origin. In the absence of scientific records, and in view of the more or less haphazard and often none too careful methods of "seed" Potato distribution, it would be difficult to express any definite opinion on this question.

The following short list indicates some forms which closely resemble each other. Whether the resemblance is so complete as to be evidence of genetic identity I cannot positively say. No doubt many similar cases will occur to your readers.

	H.	Heliotrope; W.	White.
	VARIETY.	FLOWER.	TUBER.
1.	Factor .. / Up-to-date .. /	H., slight W. tips; no pollen.	W., long, oval, flattened; eye shallow, sprout with but slight colour.
2.	Abundance .. / Favourite .. /	W., no colour seen; very few pollen grains.	W., solid pebbles; eye somewhat marked; tend to scab; bluish purple sprout.
3.	Adirondack .. / Invincible .. /	No flowers seen.	Blush pink; solid, long or pebble; eye marked and deeper in colour.
4.	Flourball .. / Shamrock .. /	W., with slight H. below; quantity of pollen; sets seed-balls.	Solid, roundish, suffused pink; eye somewhat deep.
5.	British Queen / McPherson .. /	W., no pollen ..	W., solid, long; eye marked with brown.
6.	Langworthy .. / Peacemaker .. / Table Talk .. / What's Wanted /	H., W. tip; no pollen.	W., long, cylindrical, often tapering; eye shallow; strong cork; sprout purplish.

Each group in the above list appears to represent a particular combination of characters affecting foliage, flower, and tuber. A description which would make the character of the foliage of these varieties readily distinguishable is practically impossible. One depends upon the following characteristics to distinguish the foliar types met with; the number of pairs of leaflets, the presence of interfolioles, length of petiole and the distance between the insertion of successive pairs of leaflets, the shape, size, width, margin, surface, texture and apex of the leaflets, and also the size of the terminal leaflet.

It is not surprising that the difficulty of similar or identical forms has been met with in the Ormskirk trials, and the evidence accumulated during the course of scientific breeding would be of the utmost value and help. To call a form, a seedling of Up-to-Date, Factor, Langworthy or British Queen, for example, tells next to nothing as to its parentage, unless something is known of these varieties. These particular forms being sterile on the male side, cannot be made pollen parents, and for the same reason it is impossible to obtain selfed seedlings from them. Absence of seed-balls on these varieties is a definite and characteristic feature. Only when they are grown in close proximity to types bearing abundant pollen is there any chance of an occasional seed-ball being found. This season, at the John Innes Horticultural Institution, where numbers of varieties and seedlings were grown, and many with abundant pollen set innumerable seed-balls, one ball only was found on the "male sterile" forms. Six rows of Kerr's Pink, each of 20 plants, were grown, and the plant which bore this single berry was in an outside row and next the path. Putting aside the extremely improbable view that the flower from which the berry resulted had effective pollen, it is clearly evident that, although the plants raised from the seed of this berry might for convenience be termed seedlings of Kerr's Pink it is a loose term, and is not a scientific method of designating the parentage, as it fails to disclose the paternal element. Pollen from some other variety must be used in order to set seed in such "male-sterile" forms. Hence many and perhaps the majority of seedlings from cultivated varieties must be derived from cross-fertilisation.

My experience has been that seedlings raised from seed produced as a result of selfing those domestic varieties which have pollen, frequently bear a close resemblance to the parents in foliage characters, but rarely do well, lacking the vitality and growth which characterise the offspring resulting from cross-pollination. I believe that this must also be the experience of raisers of new varieties, and that they do not make any considerable use of selfed offspring.

There is the further problem of the origin and selection of early-maturing varieties. It is generally assumed that owing to the rapidity of growth and tuberisation many of the first earlies drop their buds or otherwise fail to flower, and only by resorting to unnatural cultural conditions can they be made use of in breeding. Even then the stamens are likely to remain ill formed, and the plant useless on its male side.

Facts derived from the scientific breeding of the Potato are accumulating, but still old varieties will masquerade under new names until law and order are introduced into distribution, and the pedigree of each new variety sent for trial is fully and accurately disclosed. *E. J. Collins.*

The Week's Work.

THE KITCHEN GARDEN.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

Ground Operations.—Push forward the work of preparing ground for next year's crops, as recommended in the Calendar of November 9. Endeavour by tillage to obtain a soil of uniform quality and fair depth, and one containing the elements necessary for the successful growth of each individual crop. If drainage is necessary, this should be attended to; the depth and distance apart of the drains should vary according to the nature of the soil. As a rule, all soils with a subsoil of clay require draining in order to cultivate them to the best advantage. Charred refuse and burnt earth, mortar rubbish, road grit, and other similar materials, are all aids to fertility. The garden fire may now continue to burn in its own way, and if carefully replenished with fuel occasionally, a large heap of burnt earth may soon be had. At this season of the year all kinds of animal manure may be used in a tolerably fresh state.

Collecting Tree Leaves.—Forcing may be necessary on a much larger scale than usual next spring, and those who are in a position to collect an abundance of leaves can always turn them to good account in various ways. Hotbeds are required for forcing Asparagus, Seakale, Potatos, Carrots, and other crops, besides being of the greatest service in raising seedlings required for furnishing a kitchen garden. Oak and Beech leaves are the best, but for making ordinary hotbeds a general mixture with a little strawy litter is suitable. If good leaves are plentiful, a few loads collected in a sheltered place in the woods convenient for carting are better than large heaps placed in one place to ferment, for the leaves would lose their value before being required for use. If these heaps do not possess any marked fertilising properties they are of the greatest value for use in lightening heavy ground, if not required for the making of hotbeds.

Early Potatos.—A few early Potato sets should be placed in boxes to sprout in readiness for planting in pots or heated pits. Clear out the old hotbeds and replace them with freshly prepared leaves and litter. If plenty of leaves are available, the pits can be filled at once, treading them firm; fallen tree leaves will provide a gentle and lasting warmth, which will carry the tubers to maturity. When only a small quantity of new Potatos is required, pots are the best for very early forcing, as they can be stood in any early forcing house in a light position where the temperature ranges about 55°.

Seakale.—Where other vegetables are likely to be scarce, these roots may be made more use of after this date, as the crowns will now respond to gentle warmth. Treat the forcing roots as advised in the Calendar for November 2, also protect and prepare roots in the open as was recommended then.

THE ORCHID HOUSES.

By J. COLLIER, Gardener to SIR JEREMIAH COLMAN, Bart., Gatton Park, Reigate.

Management of the Houses.—Great care must be exercised in regulating the temperatures and the atmospheric conditions of Orchid houses in winter; endeavour to maintain the temperature of each division as evenly as possible. During frosty weather, when much fire-heat is necessary, take measures to prevent the atmosphere from becoming excessively dry. On bright mornings following frosty nights, as soon as the temperature commences to rise to the proper degree, all bare spaces should be moistened thoroughly by syringing; the stages, spaces between the pots, the paths, and the floor underneath hot-water pipes should all be damped. Houses with paths formed of iron gratings or wooden lattice work over the natural earth will not require damping so much as those with paved or tiled floors. The East Indian, Cattleya and intermediate houses should be damped between 2 p.m. and 3 p.m. One damping should suffice in the Odontoglossum house, but the amount of atmospheric moisture should be regulated at all times in accordance with the weather.

Temperatures. — The night temperature of the various houses should be regulated as nearly as possible as follows:—East Indian house, 65° to 68°; Cattleya house, 58° to 63°; intermediate house, 55° to 58°; and Odontoglossum house, 48° to 52°. On very cold nights the lower temperature will suffice, as an excess of fire-heat is harmful to the plants. The houses should be warmest at mid-day. During very cold weather the temperature should be about 5° warmer at mid-day than in the early morning, but the thermometer may be allowed to rise several degrees higher during periods of bright sunshine. If lath blinds are fixed to the houses, they should be lowered during cold nights; if permanent blinds are not used, the glass may be protected by some other covering, such as canvas or Archangel mats. Their use will prevent the temperature from fluctuating, economise fuel, and keep the atmosphere from becoming very dry.

Ventilating.—Admit fresh air whenever it is possible to do so without lowering the temperature or chilling the plants. Air is best admitted through the bottom ventilators, which should be so arranged that external air will become warmed somewhat by passing over the hot-water pipes. The ventilators on the side sheltered from the wind should be opened first, and, as the temperature in the house rises, those on the other side should also be opened a little to cause the air to circulate freely.

Watering. Plants that have finished their growth should be allowed to become dry between each application of water at the roots, giving them only enough moisture to keep the pseudo-bulbs in a plump, rigid condition. Plants that are growing actively, and others that are pushing up their flower spikes, will need water on more frequent occasions than those that are resting.

PLANTS UNDER GLASS.

By E. HARRISS, Gardener to Lady WANTAGE, Lockinge Park, Berkshire.

Annuals in Pots.—Annuals should be largely grown for furnishing greenhouses and conservatories during spring and summer. There will be great demand for flowering plants of all kinds next year, and it will be wise to anticipate this demand by making timely preparation. Annuals of various kinds should be sown at once, and the seedlings grown slowly in cool houses. Those which have already been raised, such as Schizanthus, Clarkias, and Godetias should not be hastened into growth by the use of fire-heat. They will grow much more satisfactorily in cool houses, and fire-heat is not needed except to keep out frost. Annuals may be repotted at any time when they are sufficiently well rooted. Use a fairly rich compost and pot the plants firmly. Guard against aphides, which would cause much damage to the plants if allowed to spread; it is wise to anticipate attacks of the pest by lightly fumigating the houses at regular intervals. If dwarf plants of Clarkia are desired, pinch out the tips of their leading shoots.

Lachenalia. For the next few weeks Lachenalias should be grown in cool conditions, and as near to the roof glass in a shallow pot. They will succeed the better if the pots or pans are stood on a cool, moist surface, such as is provided by coal ashes or gravel. Ventilate the house freely during favourable weather, but do not expose the plants to cold draughts. Fire-heat will only be necessary to keep out frost.

Helleborus niger.—Flowers of the Christmas Rose will be more than ever acceptable this season. Where the plants are flowering in the open, the blossoms should be protected with frames or hand-lights, which not only keep the petals clean, but cause the flower stems to elongate considerably, thus making the blooms more useful for purposes of decoration. If necessary, a few roots may be lifted and placed near the roof glass in a house of moderate warmth.

FRUITS UNDER GLASS.

By W. J. GEISE, Gardener to MRS. DEMPSTER, Keele Hall, Newcastle, Staffordshire.

Plums in Pots.—The earliest Plum trees in pots that were re-potted directly the fruits were gathered may remain out-of-doors until they are required for forcing. Care should be taken that the pots are well protected from injury by frost. During mild weather, thin the spurs where they are crowded, and carefully but thoroughly wash the trees down to their bases with strong soapy water or a solution of Gishurst compound. The end of the year will be quite early enough to commence forcing, but the trees may be brought indoors a little before they are started into growth, provided the house is kept cool and well aired.

Late Pot Plums. Should any of the late trees of Plums in pots need attention at the roots, whether it be by reducing the old ball of soil or by potting the plants afresh in a suitable compost, the work should be done forthwith. The ball of soil and roots may be pared smaller with a sharp knife, the old crocks removed, and the trees re-potted in a receptacle one size smaller, or they may be divested of all the old soil, the roots trimmed, and re-potted in fresh compost. Probably some of the trees may not need a fresh pot, in such cases the drainage should be made perfect, the old surface soil washed out down to the roots and replaced by a compost of loam, lime rubble, burnt earth or wood ash, and a sprinkling of bone meal. Whichever method is adopted, it is essential to make the soil quite firm. The trees may be placed out of doors on a dry, well-sheltered border, or returned to a cool house. The pots will need to be protected from frost if placed in the open.

Cherries in Pots. Cherry trees in pots intended to be started into growth in January should receive practically the same treatment as advised for early pot Plums. It is important for the present to maintain a low temperature and to keep the roots moist. Take precautions to protect the trees from birds, or many of the buds will be destroyed.

THE FLOWER GARDEN.

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

Roses In order to have a few early blooms some of the Roses trained against walls, and especially the walls of hothouses or dwellings, may be pruned now and re-nailed. The pruning should not be so severely done as is usual in spring, but rather seek for and leave shoots that show buds in a forward state. All weak shoots should be cut clean out as being worthless for the purpose in view. A dressing of cow manure may be laid over the roots of the Roses, and during hard frost some protecting material placed in front of them, but not as a permanent protection. Blooms will be in to gather in April and May, though they will not be so large as those produced later in the season.

Thinning Shrubs. This is not the best time to examine and cut out the useless branches and shoots of flowering shrubs, but the exigencies of the times may have made it impossible to prune them at the proper season, and now, when there may be time to spare, it is worth while to overhaul them all. Just at this season I would advise only the thinning of shrubs, that is to say, the removal of all growths which obviously are of no value for flower production, and therefore a drain on the strength of the plant. Also, where a commoner or less valuable shrub is crowding a more valuable one, enough of the former should be removed to give both sufficient space to grow for a couple of years at least. Where it is possible to burn the prunings close to the shrubs, it saves a lot of time, and I have found it pay in this respect to lift enough turf to give space for a fire, returning the turf after the ashes have cooled.

Romneya Coulteri. A few flower buds are still in evidence on plants of Romneya Coulteri, but in most seasons the shoots are cut down to the ground by frost at this time of the year, and it is worth while to place some simple protecting material over the stools for the next eight or nine weeks. This plant is easy of increase by means of root cuttings, which may be taken now and placed in light soil in 4-inch pots. House the cuttings in a cool structure until the spring, when a little extra warmth will cause them to grow. The plant naturally produces offsets after being thoroughly established, and any of these that are in evidence may now be severed from the parent plant, the roots trimmed, and planted in a pot just large enough to contain the roots. These will be in fit condition to plant out in April or early in May, and will give late flowers the same year.

THE HARDY FRUIT GARDEN.

By JAS. HUDSON, Head Gardener at Gunnersbury House, Acton, W.

Scale on Pear and Other Trees.—As soon as the work of pruning fruit trees is completed, if there are any traces of scale insects, means should be at once taken to check and if possible to eradicate them. This pest is found more frequently on Pears and Plums against walls than on trees in the open. For bad infestations use a solution of soft soap (preferably carbolic), at a strength of 8 ounces to 2 gallons of hot water. Apply the specific whilst it is hot, with a new paint brush; so long as the finger can be kept in the mixture without discomfort it will not be too hot to harm the bark. Paint the bark thoroughly up to the buds, and lightly touch these. It is a good plan to have two lots of mixture in use, one being warmed over a slow coke fire whilst the other is being applied. Similar insecticide may be used on Peach and Nectarine trees for destroying the larger brown scale, but it need not be quite so strong or so hot, as these large scale insects are more readily killed. A form of white scale adheres very tenaciously, and is an insidious little pest to deal with, but as it is more easily detected than the mussel scale it may be attacked in good time. Two applications may, however, be needed to destroy this pest.

The Slug Worm.—This insect attacks Pears chiefly during the early summer, but I have noticed it as late as September. Finely slaked lime is an efficacious remedy in summer, but during the resting season it will be well to give the trees a dressing with lime-sulphur. I prefer to purchase this preparation rather than compound it, and it keeps well in a tin. Syringe the trees for this insect as soon as the pruning is done, and dust the ground under and near to the trees with finely slaked lime. This same preparation is an excellent specific for red spider and mildew.

Mealy Bug. I have only once seen this pest on out-door Vines, and in that instance I advised a thorough clearance to be made. It would be very serious if it attacked out-door Figs. I do not think any other hardy fruits are likely to be attacked by mealy bug. In any case, when total eradication is not deemed advisable, the best remedy is hot water applied as hot as possible by means of a syringe. Afterwards apply paraffin-soft soap emulsion. I have found mealy bug on Ivies near to fruit houses, and also on Ampelopsis Veitchii, hence if it be prevalent under glass it is possible for it to give trouble out of doors also. It is stated that there is a hardy form of this pest, and I am inclined to believe that this is true.

EDITORIAL NOTICE.

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

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

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Letters for Publication, *as well as specimens of plants for naming, should be addressed to the* EDITORS, 41, Wellington Street, Covent Garden, London. *Communications should be* WRITTEN ON ONE SIDE ONLY OF THE PAPER, *sent as early in the week as possible, and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.*

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY, DECEMBER 9—
United Hort. B. & P. Soc. Com. meet

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 40.5°.

ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, *Wednesday*, December 4, 10 a.m., Bar. 29.1; temp. 56°. Weather Dull.

The Chamber of Horticulture.

The formal inauguration of the Chamber of Horticulture, which took place on Monday, December 2, and of which a report is published on page 230, marks an epoch in the development of British horticulture. The fact that the first steps which led to the establishment of the Chamber were taken so recently as July of this year is an indication that the lessons of the war in showing the need for united action on the part of all sections of the horticultural industry have been learned and applied with energy and dispatch. No one who has profited by the experience of the past few years can doubt but that united and authoritative action by horticulturists is necessary if their industry is to receive the recognition and consideration which its scope and volume deserve. Those who have given time and energy in bringing this project to a successful issue deserve the thanks and congratulations of all horticulturists. They have proposed rules and articles of association which were submitted to the meeting, and they have also secured the promises of financial support amounting to no less than £1,200 a year for the next five years. Rarely, we believe, has so much work, and work of such far-reaching importance, been accomplished in so short a time; and the thanks of the horticultural world are due to Mr. Geo. Monro, jun., Mr H. Morgan Veitch, and those associated with them on the Organising Committee. But the work accomplished is but the preliminary to that which lies before the Committee and the Council to be elected as soon as a general meeting of delegates can be arranged. The scheme of work outlined at the inaugural meeting is a great one. It includes horticultural economics and research, inquiry into questions of transport with a view to increasing facilities for transit, removing grievances and anomalies, and reducing freight charges. But the great object of the Chamber, without the fulfilment of which none of the subsidiary objects can be achieved, is the binding together in one great fraternity all members of the many branches of the horticultural industry and the establishment of one central body which shall be able to negotiate with full authority on behalf of all sections of horticulture, to which the Government shall look for advice and assistance when questions affecting the horticultural industry are under consideration.

Mr. Prothero, the President of the Board of Agriculture, drew attention in his educative and encouraging speech to the need of the fullest means of co-operation between his Department and the Chamber, and expressed emphatically the view shared by a subsequent speaker that the Chamber has before it a long career of usefulness. Thus watched by the head of that Department of State whose special concern is the fostering of the horticultural industry, and supported by the trade itself, the Chamber has come into existence under happy auspices, and is, we feel sure, certain of universal support.

Horticultural Instruction. - The Food Production Department has appointed nine Divisional Technical Inspectors (three for fruit and six for vegetables and general cultivation), who have been instructed to get into touch with Horticultural Sub-Committees with the object of arriving at a common plan of action for securing that instruction and advice on technical matters relating to horticulture may be given on definite lines throughout the counties. The Department wishes arrangements to be come to with the R.H.S. and other bodies so that the whole country may be covered during the autumn and winter by lectures given on up-to-date methods. All applications for lectures to Allotments Associations, etc., must be made direct from the secretaries to the Horticultural Sub-Committee of the County.

Hampton Nursery Workers' Club. — The committee of the Hampton Nursery Workers' Club—the establishment of which is recorded on p. 221 of last week's issue of *Gard. Chron.*—has invited Mr. W. H. PAGE, chairman of the Hampton Nurserymen's Association, to become president. Mr PAGE'S desire to promote the welfare of all those engaged in horticulture, no less than the respect in which he is held by his fellow horticulturists, will make him an ideal president, and it promises well for the success of the club that he has consented to accept this office.

U.S.A. Embargo on Arsenic. - At the request of the United States Food Administration the U.S.A. War Trade Board has placed an embargo on the exportation of white arsenic. The chief purpose of this order is to protect American farmers and gardeners against a shortage of arsenical insecticides.

Gifts to the Rothamsted Experimental Station Library. - The Trustees of the Carnegie Trust have sent a cheque for £300 to the Library of the Rothamsted Experimental Station for the purchase of important reference books. This is the second donation made by the Carnegie Trustees to the Library, a cheque for a similar amount having been given two years ago. The purpose of their donation is to afford agricultural students and experts using the Library the opportunity of consulting the most recent and most important treatises on agriculture and allied sciences. Two other valuable gifts have been received, both from Captain the Hon. ROBERT GUINNESS. The Library is fortunate in possessing an unusually good collection of early printed books on agriculture of the fifteenth, sixteenth and seventeenth centuries; to these Captain GUINNESS has now added perfect and beautiful copies of the first and second printed books on the subject, viz., the great volume on agriculture by CRESCENTIUS, printed in 1471 at Augsburg, and JENSEN'S edition of the Latin agricultural writers, printed at Venice in 1472.

Re-Stocking War-Devastated Lands. — The Royal Agricultural Society has raised a fund of £150,000 to be applied to the purchase of pedigree and other stock for the purpose of re-stocking the devastated regions of France, Belgium and Serbia.

Dutch Firm's Jubilee.—The firm of C. G. VAN TUBERGEN, JUNR., Zwanenburg, Holland, is celebrating this year its fiftieth anniversary, and we have received an excellently conceived and executed souvenir, in the shape of a book, printed on art paper and freely illustrated, descriptive of the establishment and subsequent activities of the firm. One of the first illustrations is of the ancient farm of Zwanenburg, on the site of which the establishment still stands, but most of the old buildings are replaced by modern houses, and where sheep and cattle once grazed are now fields of brilliant blossoms. There are many illustrations of the numerous honours and diplomas gained by the firm at exhibitions in almost every European country for new varieties of Tulips, Freesias, Irises, and other bulbous plants. One of the pictures shows the PRINCE CONSORT of the Netherlands making a visit to the nurseries in 1908. It is an interesting group, portraying the four present members of the firm—Mr C. G VAN TUBERGEN, now an elderly man, Messrs J. M. C. and TH. M. HOOG, and THOMAS HOOG, JUNR., the eldest son of Mr. J. C. M. HOOG. It is a pleasant reflection that the jubilee of the firm is coincident with the return of peace, and readers will join us in wishing Messrs. C. G. VAN TUBERGEN, JUNR., an even greater measure of success than they have enjoyed in the past.

Forestry Training at Edinburgh.—The Edinburgh University Court has approved of a scheme made by arrangement with the War Office, by which the Forestry Department will be given facilities for the use of the woods and forest tree nursery at Dreghorn Estate for a forest garden for the training of students in forestry in connection with the University.

The Fuel Problem.—In view of the shortage of coal for horticultural purposes this winter, the following hints for preserving greenhouse plants until the return of warmer weather may be valuable to amateur gardeners. They have been sent by the Rev. W. WILKS, secretary of the Royal Horticultural Society: Go through the stock and throw away any surplus plants. Close the others up into the smallest available space in the most easily heated house. Calculate the amount of fuel at disposal and arrange for it to be equally distributed so as to keep up a uniform temperature, not less than 45°, or more than 50°. Keep all the plants very dry, and do not throw water about the house, or paths, or stages. Keep the ventilators closed except during bright, sunny weather. Carefully stop all openings in the roof, etc., through which cold currents of air might come. Arrange to "mat" or otherwise cover the outside of the house before really hard frosts set in. This may be done on the outside with old matting or sacking, and on the inside keep ready beforehand a good sup-

ply of paper (old newspapers, etc.), and lay them lightly over the plants, resting on the leaves. These may be removed during mild weather and replaced at return of frost. Specially rare or tender plants should have a fold or two of paper wrapped around them and the paper retained until the spring. The most effectual safeguard is to keep all plants dry, only giving a very little water at wide intervals. Particular care should be taken not to alternate warm and cold treatment when fuel is to be had some times and not at others. Begin cold treatment and maintain it uniformly. As an extreme measure in the case of Orchids it would be possible after the plants had been allowed to become thoroughly dry to turn them out of their pots, remove the potting material, wrap each plant in one or two folds of paper, and place them closely together in large boxes (as though they were to be sent away as goods); place the lids on in such a way that a little ventilation is provided, and store in a warm, dry shed or loft until the severe weather has passed, when they can be removed, repotted and placed in the house to grow again. Such treatment would be only what Orchids have to undergo during import or export.

Brasso-Laelio-Cattleya Antoinette. — The experienced hybridist is prepared for unexpected results, but in some cases the evidence of the parentage recorded is so difficult to trace that its correctness is questioned. The fine Brasso-Laelio-Cattleya Antoinette Gatton Park variety, for which Sir JEREMIAH COLMAN, Bart., was awarded a First-class Certificate at the Royal Horticultural Society on November 5, is a very notable instance of the domination of one parent to the almost complete exclusion of the features of the other. B. L.-C. Antoinette was raised between Cattleya Portia (*coerulea* (*labiata coerulea* × *Bowringiana*) and Brasso-Laelia Helen (B. Digbyana × L. *tenebrosa*), the latter having rather long, lanceolate sepals and petals, and a form quite the opposite of the model flower produced in the cross. The only suggestion of Brasso-Laelia is the slight fringing at the margin of the lip, the main characters of the flower being of C. Portia, with an enlargement of all its parts; the colour is bright rosy-mauve with reddish purple front to the lip, the varying tints being almost impossible to indicate in a photograph. At the meeting of the Royal Horticultural Society on November 19, another plant of the batch was shown, the flower being of the same character as that illustrated in fig. 91, but the plant had the hard, slender pseudo-bulbs of Brasso-Laelia Helen, and adequately proved the correctness of the parentage recorded.

War Items. The friends of M. HENRI NONIN will be interested to learn that he has been promoted to the rank of 1st Lieutenant, and that his connection with the American Forces has now terminated. He has returned to his regimental depôt.

Mr GUY NEVILLE, a former member of the Kew Garden staff, has returned safely from Germany. When war broke out Mr. NEVILLE was studying viticulture on the Rhine, and was interned in Ruhleben Camp.

In order to assist the funds of the Society for the relief of horses wounded and broken in the war, of which the Duke of PORTLAND is the President, the Duchess of PORTLAND has taken several shops in various parts of the West End of London for the sale of gifts sent by her friends. A large shop in Regent Street is devoted to the sale of choice fruit and vegetables, where a large business is being conducted in the sale of these commodities. The window of the shop has been attractively arranged by Messrs. SUTTON AND SONS, and the unusual display has caused such interest that the pavement has often been blocked by those inspecting the window.

HOME CORRESPONDENCE.

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

Bud Variation in Potatos.—The paper upon this subject which was delivered by Mr Arthur W. Sutton, at the Ormskirk Potato Conference on October 31, does not state actual facts correctly. Mr Sutton has apparently failed to grasp the position of the careful investigator in this important and interesting problem in regard to the Potato. I am not concerned with his interpretation of Nature and her laws, nor shall I attempt to criticise his philosophy. He makes one statement, however, which I lose no time in controverting. It is as follows: "But those who claim that new and distinct varieties have arisen by bud variation assert that, from the earliest stages of growth above ground, the so-called new varieties are wholly and completely distinct from their neighbours in the plot." He then goes on to say: "The fact, however, is that we have been advised not to remove plants which we call 'rogues' from a crop of Potatos, because they may be new and distinct varieties which have arisen by bud variation immediately gives the lie to the whole claim, as in every instance where it is said a new variety has so arisen, the whole of the tubers at the base of the plant when lifted differ entirely from the tubers in the plot, and, moreover, are all like one another." As one who claims to have obtained mutants from certain varieties of Potatos, I state, and state emphatically, that they have been obtained as odd tubers on a stolon bearing all other tubers true to type of the particular variety which the seed set represented. "Rogues" are another matter altogether. If mutants, however, are not observed, and are passed with ordinary seed tubers for use in the ensuing planting season, they become "rogues." Those interested in this problem are quite aware that all so-called "rogues" are not what they are popularly supposed to be. As I stated in my last note on this subject, however, accuracy is essential before we can say which is a "rogue" and which is not. I have two instances this season—thanks to careful observation when lifting—of totally different types to the parent on a stolon otherwise throwing tubers true to type. *George M. Taylor, Mid Lothian.*

Home Oil Production.—The Flax, the seed of which contains 34 per cent. of oil (Konig), and the Sunflower, unshelled seed of which yields 31 per cent., and shelled seed 44 per cent. of oil, have been popularised of late. Another oil-producing plant which the Germans and Austrians grow largely is the garden Poppy (*Papaver somniferum*). According to Konig the seeds yield 40·8 per cent. of oil; according to the *Encyclopedia Britannica* 30·40 per cent. by cold pressing, with a total of 50·60 per cent. a heavy yield; it seems to be indifferent whether the seeds be dark or pale. Besides being put to technical uses the oil is largely employed as salad oil, and it is perhaps significant that many bottles from the grocer bear the legend "Best salad oil," not, be it noted, "Olive oil." As a few casual plants came up in my garden they were left to seed in order to see what yield they would give. Five plants, one a fairly large branched one, the others medium or small in growth and development, yielded no less than 3½ ounces of seed. Since the specific gravity of the oil is given at 0·9249, it is clear that not many dozen plants should be required to obtain a pint of oil. Grown on a small scale the plants and their pods could be kept upright, so that the seeds would not fall out of the capsules. *B. E. D.*

FIG. 91.—BRASSO-LAELIO-CATTLEYA ANTOINETTE GATTON PARK VARIETY: COLOUR BRIGHT ROSY MAUVE, FRONT OF THE LIP REDDISH PURPLE.

SOCIETIES.

THE CHAMBER OF HORTICULTURE.

THE Chamber of Horticulture is now an accomplished fact, and it will be legally entitled to take its place in the world of horticulture as soon as the Articles of Association have been registered. The inaugural meeting was held at Caxton Hall, Westminster, on Monday, December 2, and proceedings commenced about four minutes after the advertised time—2.15. Mr. George Monro, junr., presided, and there were between 150 and 200 people present. On the platform, with the chairman, were the Rt. Hon. R. E. Prothero, President of the Board of Agriculture; Sir Henry Rew, Permanent Under-Secretary of the Board of Agriculture; Dr. F. Keeble, Controller of Horticulture; Mr. A. G. L. Rogers, of the Horticultural Section of the Board of Agriculture; Mr. W. Joynson Hicks; Mr. F. R. Ridley, London Fruit, Flower and Vegetable Markets Association; Mr. H. Morgan Veitch, Mr. Arthur W. Sutton, Mr. Joseph Rochford, Mr. J. S. Brunton, and Mr. Moore, hon. treasurer of the Chamber.

Mr. Prothero, who was the first speaker, had a hearty reception. He said he was pleased to be present at the establishment of the Chamber of Horticulture, especially as it gave him the opportunity of thanking the members of the horticultural trade for the way they had accepted Orders made necessary by the war, and of thanking Dr. Keeble for all he had done for him, for the trade and for the nation. If the Chamber was to be a successful and powerful influence in the industry its foundation must be laid on broad and comprehensive lines that would embrace every section of the trade. Established on such lines, it would be valuable for two reasons. Firstly, because it would give to Horticulture that unity which makes for strength not only to the industry as a whole, but also to every part. Secondly, because it would be a direct channel of communication between the Board of Agriculture and the trade; the Board would help the Chamber; the Chamber would greatly help the Board, and he hoped the two would work together. The work of the Advisory Committee had shown the value and need of co-operation with those intimately connected with commercial horticulture and it had rendered splendid service during the war. Now, under altered conditions, the Chamber would take up much of the work. There were many ways in which help could be afforded. In horticultural research we had lagged behind some other peoples, but if we were bad starters we were good finishers. In connection with fruit cultivation there was ample scope, and he hoped that scientific research, carried on by the Chamber and the Board, would soon make good any deficiencies and set a pattern for others to follow. The eradication and control of diseases and insect pests were matters of immense importance in which the co-operation of the Chamber would be very helpful because of the practical experience which it would bring to bear upon them. In regard to railway and other means of transport, the Chamber would be able to do what persons and special societies could not do on piecemeal lines. In conclusion Mr Prothero considered that the Chamber of Horticulture and the Board of Agriculture together would form a powerful instrument for the advancement of horticulture; he desired to see such a Chamber established and every section of the trade co-operating to make it effective.

Mr Prothero's speech was heartily applauded, and he was thanked before leaving to fulfil another engagement.

Mr. Ridley, in a few appropriate words, emphasised the need for focussing the energy of every section of the trade by means of a central Chamber, and he proposed "That this meeting of representatives of commercial horticulture in all its branches heartily welcomes and supports the inauguration of the Chamber of Horticulture." Mr. W. Joynson Hicks, who for many years has been Member of Parliament for the large market-gardening district of Brentford, seconded the motion, and submitted that few people understood how much the market growers had done in providing food for the nation during war-time. The industry did not hold the position it deserved. He suggested the Chamber should be the guiding spirit in the training of home-coming men who desired to take up commercial gardening as a means of livelihood. Every other industry had its Chamber, and he was glad horticulture had now come into line. The question of transit was of exceptional interest to commercial horticulture, and the Chamber should press for the reconstruction, improvement and extension of good roads, as well as better railway facilities and reasonable rates. To be a success the Chamber must, he submitted, be representative and universal; no section and no interest should be omitted. There should be no standing aside because of selfish motives. The idea should not be "I can get nothing out of it," but the unselfish one of helping so that the industry as a whole would benefit. All should join, all act as missionaries, secure a Council in whom the trade would have confidence, and then back it to the fullest extent. The motion was then put and carried unanimously.

Mr. Monro then outlined the aims of the Chamber, and especially referred to the fact that the Chamber desired to encourage all sectional and local trade bodies connected with horticulture. He believed there were not enough of such societies: it had taken war conditions to awaken some sections of the trade to the need of organisation. The Chamber would not interfere with the "home rule" of these societies; it would, by their inclusion, be strong enough to exercise a powerful influence in the interests of all. With the Chamber as guide, Government control could be so influenced that it would give the greatest national advantage at the least cost and the least disturbance of trade. Transport, imports, and Parliamentary matters would all receive full consideration by the Chamber. As regards statistics, horticulture was in an almost hopeless condition, and one of the first things the Chamber would consider was the compilation of statistics which would serve to show the extent of the industry and give a fair idea of the capital involved, labour employed, and material produced. It was hoped that the Chamber would soon have a building of its own with room therein to accommodate the secretariats of the trade societies having London offices. As regards finance, business men had, as a business measure, guaranteed an income of about £1,200 a year for five years.

Sir Henry Rew supported the formation of the Chamber, and admitted that horticultural statistics were far from complete, but he believed the market-gardening industry held about 1,000,000 acres, and the value of the produce at 1913 values was about £17,000,000, exclusive of glass production, flowers, and the nursery trade. It would be a sound policy on the part of the Chamber if it collected facts (not always a popular business) relating to the trade and then proceeded with legislation, instead of legislating first and then getting the facts.

Dr. Keeble said that had the Chamber of Horticulture been formed two years ago it would have been able to render great service, and a great deal of loss incurred would have been saved. He considered the step taken that afternoon was a fortunate and wise one in view of the difficult reconstruction period ahead. He believed in the long run horticulture would prove to be one of the greatest of our national industries, but at present there were no statistics to show its importance—nothing but estimates. An economic investigation of horticulture could only be obtainable through a Chamber of Horticulture. Rural re-population would soon solve itself if statistics were forthcoming. For instance, a farm of 150 acres of mixed arable land, in the Midlands, employed five men ten years ago; now it had 30 acres under market gardening and fruit, and 20 men were employed, besides 150 pickers in fruit harvests. In 1851 three men and a boy were employed on a 150-acre holding, and the wages were 15s. per week for the men. In two years this holding under market gardening and fruit, employed 20-25 men and 30-100 women, and the men's wages rose to 20s. The holding was increased to 310 acres, and under intensive cultivation it gave employment to 90 men in winter, 110 in spring and summer, and 50 women, and the annual wages bill came now to £10,600. The question of land settlement should be on sound lines, and statistics were needed for guidance. There was little to show the average cost of crop production; no figures to show what were the best Apples for certain districts, and their rate of growth and production. In these and so many other directions the Chamber of Horticulture would be able to investigate and provide the necessary figures, and he therefore wished it a long, busy and profitable career.

Further approval came from Mr. A. G. L. Rogers, who suggested that nomenclature of fruits, Potatos, and vegetables (in reference to duplication of names) was a subject the Chamber might take up, as well as the proprietary rights of raisers of new fruits, flowers and vegetables.

Mr. H. Morgan Veitch, in a very capable speech, outlined the Rules and Articles of the Chamber, pleaded for the combination of all sections of the trade, suggested a labour register, a conciliation board, and the possibility of increasing the interest in horticultural charities, and he proposed "That the Organising Committee is hereby authorised and requested to register the Chamber of Horticulture under the Companies Acts with Memorandum and Articles of Association, and that such Committee do act as the Council until the election of the first Council by the members." Mr. W. Seabrook seconded the resolution, which was then carried unanimously.

Mr. C. H. Curtis stated that the establishment of a commercial horticultural library was one of the aims of the Chamber, and he asked for contributions of horticultural works so that the nucleus of a good library might be formed by the time the Chamber was suitably housed. A vote of thanks to the chairman, moved by Mr. Wm. Poupart, brought the meeting to a close.

ROYAL HORTICULTURAL.

DECEMBER 3.—At the meeting held in the London Scottish Drill Hall on this date there was a fair attendance. The exhibition was small but quite good, owing, chiefly, to the presence of many handsome Orchids, one group of these plants obtaining a Gold Medal. Other flowers displayed were Chrysanthemums, Ferns, Winter-flowering Begonias, and a few hardy plants.

The Fruit and Vegetable Committee had no business to conduct. The Floral Committee granted three Awards of Merit and four medals, and the Orchid Committee awarded a Gold and one other Medal, two First-class Certificates, and two Awards of Merit.

Floral Committee.

Present: Messrs. H. B. May (in the chair), E. A. Bowles, S. Morris, G. Reuthe, C. R. Fielder, Wm. Howe, F. Page Roberts, John Heal, Geo. Harrow, Thos. Stevenson, Chas. E. Pearson, Arthur Turner, J. W. Moorman, George Paul, C. Dixon, H. J. Jones, John Dickson, E. F. Hazelton, W. P. Thomson, R. C. Notcutt, A. G. Jackman, E. H. Jenkins, W. G. Baker, and J. F. McLeod.

AWARDS OF MERIT.

Chrysanthemum Bronze Molly.—A large-flowered single variety and a counterpart of Molly Godfrey, from which it is a sport, in all but colour. The ground colour is yellow, and this is overlaid with carmine, but the general effect is golden bronze. Shown by Messrs. W. J. GODFREY AND SON.

Chrysanthemum Mrs. H. J. Jones.—This is a large, bold, and shapely single variety with broad, firm florets. The colour is palest blush with a slightly deeper hue at the tips of the florets. Shown by Messrs. H. J. JONES.

Carnation Brilliant.—Judging from the plants submitted, this is a free-flowering Perpetual Carnation of good habit. The large blooms are deep scarlet and the margins of the broad petals are slightly fringed. Slightly scented. This variety also obtained a Certificate from the Floral Committee of the British Carnation Society. Shown by Messrs. STUART LOW AND Co.

GROUPS.

A bright little group of Chrysanthemums, staged by Messrs H. J. JONES, Ryecroft

Nursery, Lewisham, contained beautiful blooms of Alfie, Beacon, the new, blush-coloured Mrs. H. J. Jones, Bronze Beauty and Daybreak among singles, and Princess Mary among Japanese varieties. (Bronze Banksian Medal.) Another effective group of these flowers was set up by Messrs. W. J. GODFREY AND SON, and in this the new golden-bronze Molly Godfrey, a large single, was the principal variety, in association with Dora, Captivation, Audrey, and Queen of the West. (Bronze Banksian Medal.)

Messrs. S. LOW AND CO. exhibited a group of about twenty varieties of Perpetual Carnations, each represented by a dozen or eighteen blooms of good quality. (Bronze Flora Medal.) Mr. G. REUTHE showed various interesting shrubs, and Messrs. H. B. MAY AND SONS grouped Ferns of many kinds with a few semi-tuberous winter-flowering Begonias and Cyclamen. (Silver Banksian Medal.)

Orchid Committee.

Present: Sir Jeremiah Colman, Bart., in the chair; Sir Harry J. Veitch, Messrs. Jas. O'Brien (hon. secretary), W. Bolton, W. H. White, R. A. Rolfe, C. J. Lucas, A. McBean, W. H. Hatcher, S. W. Flory, J. Charlesworth, E. R. Ashton, W. J. Kaye, T. Armstrong, Fred Sander, Frederick J. Hanbury, and Pantia Ralli.

AWARDS

FIRST-CLASS CERTIFICATES

Brasso-Cattleya Catton Lily (C. Trianæ albens × B.-C. Daphnæ Mendelii var. Fortunæ), from Sir JEREMIAH COLMAN, Bart., Gatton Park, Surrey (gr. Mr. J. Collier). A handsome hybrid with large, pure white flowers, the front of the lip having a veined band of bright violet and a clear yellow disc. The petals are the broadest seen in this section. The spike bore two flowers.

Cypripedium John Hartley (Reginald Young × Shogun), from JOHN HARTLEY, Esq., The Knowle, Morley, Yorks.—A fine Cypripedium originally described in *Gard. Chron.*, December 1, 1917, p. 218. The variety has already been awarded a Silver Medal and First-class Certificate by the Manchester and North of England Orchid Society. The noble flower has much of the character of C. insigne Harefield Hall, the dorsal sepal, which is 3½ inches across, being pale yellowish-green, blotched with purple, the upper third pure white; the lip is greenish-yellow, tinged with rose.

AWARDS OF MERIT

Laelio-Cattleya Marshal Foch (L.-C. Myrtha × C. Luegeae), from Messrs. CHARLESWORTH AND CO., Haywards Heath. A delicately tinted flower of goodly proportions. The sepals and petals are pale chrome-yellow, tinged with rose; the lip is yellow veined and tinged with purple in front.

Laelio-Cattleya Linda Beguin, variety (L.-C. Arachne × C. Dowiana aurea), from Dr. MIGUEL LACROZE, Bryndir, Rochampton (Orchid grower, Miss Robertson). A pretty variety of the hybrid illustrated and described in *Gard. Chron.*, November 9 last, p. 189, and resembling it in form. The sepals and petals are rose-coloured with a yellow shade; the lip is ruby-purple with gold veining from base to centre.

PRELIMINARY COMMENDATION

Odontoglossum Racina (eximium × Lady Pirrie), from Messrs. CHARLESWORTH AND CO. The flowers are a rich claret colour with clear white margin; the lip is white in front, the base dark purple, and the crest yellow.

Odontioda Marshal Foch (Charlesworthii × Euphtelaea), from Messrs. ARMSTRONG AND BROWN. A remarkable cross between two noted Odontiodas and resulting in a perfect flower of deep claret-red colour. The crest of the lip is yellow with a large blotch of dark red in front, the apex being rose, spotted with red.

OTHER EXHIBITS

Messrs. ARMSTRONG AND BROWN, Orchidhurst, Tunbridge Wells, were awarded a Gold Medal for a collection which was probably the finest group of the year. The exhibit contained two hundred and twenty-five specimens of rare Cattleyas, Laelio-Cattleyas, Odontoglossums, Odontiodas, and others. The centre of the group was composed of Cymbidiums, with tall sprays of yellow Oncidium varicosum and occasional plants of good forms of Laelia anceps arranged in prominent places; in the front of the exhibit were fine forms of Cypripediums. The best novelties were Brasso-Cattleya Digbyana Mendelii var. President Clemenceau (C. Mendelii alba × B. Digbyana), a good, white flower with emerald-green centre to the lip; Cattleya Maggie Raphael var. Marshal Foch, a grand, pure white flower with broad, violet-purple lip and gold disc, and resembling the best form of C. mardyana alba; Odontioda President Clemenceau (Odm. Wilckeanum × Oda. Charlesworthii), with Indian-red sepals and petals slightly tinged with gold, and a broad, mahogany-red lip with white-fringed margin bearing a few spots. A handsome plant of a fine form of Odontoglossum eximilus with a spike of twelve finely-coloured flowers was included in the display, also various seedlings flowering for the first time.

Messrs. CHARLESWORTH AND CO., Haywards Heath, were awarded a Silver Flora Medal for a group containing a good selection of novelties, also specially good Odontoglossums and Odontiodas, among which we noted Odontoglossum plumptonense (amabile × Lambeauianum), beautifully blotched with claret colour on a white ground, and O. Prince Edward (crispo-Harryanum × Rolfeae). Ordinary forms shown were blotched with purple, but one was an albino with pale coloured markings.

Sir JEREMIAH COLMAN, Bart., exhibited flowers of Cochlioda gattonense speciosa × Sanderae with pretty white flowers showing the ridges of C. speciosa in the lip; and an interesting cross between Cattleya Adula and C. Dormaniana named C. Adula Dorman.

FREDERICK J. HANBURY, Esq., Brockhurst, East Grinstead, sent for recording a flower of Dendrobium Hanburyi (Dalhousieanum × Smithianum oculatum) yellow in colour, with a maroon-coloured disc to the lip.

Dr. MIGUEL LACROZE showed Laelio-Cattleya Linda aurifera with yellow sepals and petals; and L.-C. Linda illuminata.

Messrs. FLORY AND BLACK, Slough, showed the new Brasso-Cattleya Ruby (B.-C. Mrs. J. Leemann × C. labiata Peetersii), the bright, rosy-mauve flowers having a gold-veined disc to the lip; a good form of B.-C. Nestor; and some pretty unnamed hybrid Cypripediums.

Messrs. STUART LOW AND CO., Jarvisbrook, showed Cattleya Alcimeda alba; varieties of C. Gaskelliana, and Sophro-Cattleya Doris with three good scarlet flowers on the spike.

Messrs. J. AND A. MCBEAN, Cookbridge, staged a selection of Indian Odontoglossum crispum xanthotes, Odontioda Charlesworthii xanthotes, and the new Cymbidium Caroline Doris (erythrostylum × Lowianum).

Fruit and Vegetable Committee.

Present: Messrs. J. Cheal (in the chair), Owen Thomas, E. A. Bunyard, W. Bates, W. G. Weston, E. Beckett, A. Bullock, A. R. Allan, H. Markham, F. Perkins, P. W. Tuckett, W. H. Divers, George P. Berry, and Ed. Hurtess.

BRITISH CARNATION.

DECEMBER 3. This Society, formerly the Perpetual-flowering Carnation Society, held its first annual meeting under the above title at the offices of the British Florists' Federation. Mr. J. S. Brunton presided over a very small attendance of members, not many more than a dozen being present.

The annual report and financial statement were presented and adopted. In the former, special reference was made to the Floral Fair in Trafalgar Square on June 20 to June 26, when the members of the Society provided flowers which realised over £200 for the British Ambulance Funds. Although membership has diminished the Society is in a sound financial position, as there were no expenses incurred by exhibition. The turnover was £110 1s. 9d., and the balance carried forward is £52 5s. 10d., the largest the Society has ever had at the conclusion of a year's work.

The officers were all re-elected, viz., Lord Howard de Walden, president; Mr. J. S. Brunton, chairman; Mr. W. Wallace, vice-chairman; Mr. A. C. Cook, treasurer; and Mr. T. A. Weston, secretary. The latter is still in khaki, but has carried on the business of the Society with the help of his wife; he was voted an honorarium of 12 guineas. The retiring members of committee were re-elected, except that Messrs. Lay and P. Bunyard take the places of Mr. Grubb and the Rev. J. Jacobs.

The meeting agreed that a show should be held, if possible, at the end of April, 1919, and also decided that a conference should follow the meeting of the General Committee on January 28 next. We understand Mr. Wallace, of Eaton Bray, has promised to read a paper on the last-mentioned date.

CROPS AND STOCK ON THE HOME FARM.

BASIC SLAG ON GRASS LAND.

Basic slag has such a marked effect on the growth of grass that I offer no excuse for again referring to the subject. A thick crop of Clover quickly follows a dressing of slag on land which previously had never been known to produce Clover. November is the best month in which to apply this fertiliser, as the winter rains slowly wash the particles down to the roots of the grass; the good effects of an application are noticeable in the first year in the growth of Clover and the smaller grasses.

Some writers advocate the use of 8 cwt. of slag per acre; personally I would rather apply this quantity in two dressings with an interval of two years; the larger quantity is too much for effective assimilation, and half the quantity on two occasions gives better results. Before sowing the slag the surface soil should be worked with heavy iron harrows. It is possible to sow basic slag by hand in small quantities, but it is much more evenly spread if a proper distributor is used. Cattle should not be allowed to graze the grass for quite three months after the slag is sown.

THE 1919 POTATO CROP.

Now is the time to commence the preparation of the land for next season's Potato crop. Too often the soil is not sufficiently exposed to the weather, especially in the case of heavy land, which requires much more amelioration than light loam. Stiff land should be ploughed extra deeply, in order to drain the surface and render the soil warmer. Farmyard manure should be ploughed in during the autumn, but not too deeply, as it then mixes thoroughly with the soil during further spring ploughings. No doubt the best results are obtained with farmyard manure, artificial fertilisers used at planting-time, and thorough cultivation during all stages of growth. *E. Molyneux, Swanmore Farm, Bishop's Waltham.*

F.P.D. SEED WHEAT.

IN response to numerous enquiries the Food Production Department states that the varieties of selected seed Wheats of the 1918 crop, of which there are small stocks still to dispose of, are Browick, Rivett, and Little Joss. The prices are 97s. per quarter of 504 lbs., f.o.r. at the distributing agent's station, bags 2s. 6d. extra each. Orders may be placed through the Food Production Department, 72, Victoria Street, S.W. 1, but no money should be sent to the Department; preferably farmers should order through their local corn or seed merchants. All the varieties of Wheat mentioned are heavy croppers, and they have been selected from a wide range of soils, the seed being carefully re-cleaned and tested for germination and purity by the Department. Little Joss has proved very successful on every kind of soil, and is particularly suitable for light land in exposed situations and late districts.

Publications Received. Bulletin No. 265, Ontario Agricultural College, ***Bacteria Friends and Foes.*** By D. H. Jones, B.Sc., Professor of Bacteriology. (Ontario Department of Agriculture.)—***The Use of Lumber on Californian Farms.*** By Merritt B. Pratt. Agricultural Experimental Station, Berkeley, California, Bulletin No. 299. (University of California Press, Berkeley.)

Obituary.

Henry Fox. We regret to announce the death of Mr. Henry Fox, gardener for the past 16 years at Ripley Castle Gardens, Yorkshire. He was the son of the late Mr. Thomas Fox, at one time gardener at Wilton Castle, Yorkshire. Mr. H. Fox commenced his gardening career in the gardens of Pain's Hill, Cobham, Surrey; he was next employed at Burwood House, the residence of the late Dowager Lady Ellesmere, and from there went to Wexham Park, Slough, as foreman under Mr. James Ford. In the same capacity he was subsequently employed at Caversham Park under Mr. Jeffries, and afterwards obtained a similar appointment under Mr. Divers at Ketton Hall, near Stamford. His first charge as head gardener was at Kingswood, Sydenham, the residence of J. Lawson Johnston, Esq. Later he was gardener at Batteshall Mount, Worcester, the residence of the Hon. Percy Allsopp. He eventually succeeded Mr. Tunnington at Ripley Hall, 16 years ago. The funeral took place on the 24th ult. in Ripley Churchyard, where the large attendance of friends testified to the regard in which Mr. Fox was held.

R. P. Gregory.—Botanical science has suffered a severe loss in the death of Mr. Reginald Philip Gregory, which occurred on November 24 from pneumonia following influenza. Mr. Gregory, who was 39 years of age, was born at Trowbridge, Wiltshire. Educated at Weston-super-Mare, he entered St. John's College, Cambridge, as a scholar in 1898, and, after distinguishing himself in the Natural Science Tripos, devoted himself to teaching and research. He was one of the young men who took up with enthusiasm the investigation of practical problems under the leadership of Prof. Bateson, in collaboration with whom some of Gregory's work was published. The wonderful series of investigations into the genetics of Primula sinensis begun by Bateson was continued with brilliant results by Gregory. In this connection his discovery of the fact that giant races have this character reflected in their cell structure, in that the cell nucleus has twice as many chromosomes as is contained in the nucleus of cells of normal races is of great interest. Gregory's published work is characterised by a precision of which only great workmen have the secret, and, indeed, he was in the true sense a great work man—one who devoted his life to producing well-finished pieces of work. Thus he had already laid the foundation of a high reputation, and those who watched his career closely were convinced that he would have done yet greater things had he been spared. Fate has willed it otherwise, yet his friends—and they are many—who mourn his untimely loss have this solace, that since "long lives the creative work of all practical men," Gregory will be remembered not only by the regard and affection which he inspired but also by the work which he accomplished.

Robert M'Murdo. We regret to announce that Mr. Robert M'Murdo, market gardener, Glasgow Street, Maxwelltown, died on the 28th ult., in his 80th year. Mr. M'Murdo served his apprenticeship with Messrs. T. Kennedy and Co., nurserymen, Dumfries, and began business as a market gardener in Maxwelltown 54 years ago. He is survived by his widow, and two children out of a family of seven.

Augustin Gravereau. We regret to announce that Monsieur A. Gravereau, the well-known nurseryman and seedsman, of Nemphle le Château (Seine et Oise), France, died on the 23rd ult., aged 55 years. Monsieur Gravereau, who was vice-president of the Old Students' Association of the National Horticultural School at Versailles, specialised chiefly in the production of seeds of Marguerites, Pansies, Zonias, Nemesia, and Gladiolus. A number of new strains of these plants of great value owe their origin to his labours. Among Gladioli he raised the pretty and curious variety "Triomphe de Paris." During the war Monsieur Gravereau devoted all his time to the service of his country as local inspector of agricultural labour and President of the Reconstruction Committee. A. M.

Alfred Osborn. News has reached us of the death, on November 26, at West Croydon, of Mr. Alfred Osborn, after a long illness, patiently borne. Deceased was for a considerable period gardener at Hunts'land, Crowley Down, Sussex.

MARKETS.

COVENT GARDEN, December 4.

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

(All 48's, per doz. except where otherwise stated).

	s. d.	s. d.
Aralias	7 0	9 0
Asparagus plumosus ...	10 0	12 0
— Sprengeri ...	9 0	10 0
Aspidistra, green ...	30 0	60 0
Begonia, Gloire de Lorraine ...	18 0	30 0
Chrysanthemums ...	12 0	30 0
Erica gracilis ...	18 0	24 0
— nivalis ...	24 0	36 0
Marguerites, white	12 0	18 0
Solanums	12 0	18 0

Ferns and Palms: Average Wholesale Prices.

	s. d.	s. d.
Adiantum cuneatum, 48's, per doz.	10 0	12 0
— elegans ...	9 0	10 0
Asplenium, 48's, per doz.	10 0	15 0
— 32's	21 0	24 0
— nidus, 48's ...	10 0	12 0
Cyrtomium, 48's ...	10 0	12 0
Nephrolepis, in variety, 48's ...	12 0	18 0
— 32's	24 0	36 0
Pteris, in variety, 48's	9 0	12 0
— large 60's ...	4 0	5 0
— small 60's ...	3 0	3 6
— 72's, per tray of 16's	2 0	2 6

REMARKS. Business is getting more brisk in this department now; a larger variety of flowering plants are on sale. Hyemalis are the most attractive in Ericas. Other flowering plants consist of Begonias, Chrysanthemums, Marguerites, Cyclamen, and Solanums. Ferns and Palms of various sizes are going out freely. A limited quantity of Roman Hyacinths bulbs are soon bought up.

Cut Flowers, &c.: Average Wholesale Prices

	s. d.	s. d.
Arums—		
— (Richardias), per doz. bl'ms.	15 0	18 0
Bouvardia, white, per doz. bun. ...	24 0	30 0
Carnations, per doz. - blooms, best American var.	6 0	9 0
Chrysanthemums, per doz blooms—		
— white	6 0	10 0
— yellow	4 0	6 0
— pink	5 0	8 0
— bronze	5 0	8 0
— per doz. bun.—		
— white ...	30 0	48 0
— coloured ...	18 0	36 0
Croton leaves, per bun.	1 6	2 0
Gardenias, per box (12's)	10 0	12 0
— (18's)	8 0	9 0
Heather, white, per doz. bun. ...	6 0	10 0
Honesty, per bun.	1 0	2 6
Lapageria, white, per doz.	6 0	7 0
Lilium longiflorum long	18 0	24 0
Lily-of-the-Valley, per bun. ...	10 0	8 0
Orchids, per doz.;—		
— Cattleyas ...	18 0	24 0
— Cypripediums, ...	4 0	6 0
— Odontoglossums	3 6	4 0
Pancratiums, white	6 0	8 0
Pelargonium, double scarlet, per doz. bunches ...	6 0	10 6
— white, per doz. bunches ...	10 0	12 0
Roses, per doz. blooms—		
— Ladylove ...	7 0	10 0
— Liberty ...	9 0	12 0
— Madame Abel Chatenay ...	6 0	9 0
— Richmond ...	8 0	10 0
— Sunburst ...	6 0	8 0
Violets, single, per doz. bun. ...	0 6	0 12 0

REMARKS. White flowers are still in great demand, but on Saturday morning prices were considerably lower before the close of the market, especially amongst Chrysanthemums, both for spray, bunch and disbudded blooms. Roses are gradually getting scarcer, and prices are quickly rising for the best blooms. White Carnations are still high in price, but coloured varieties tend to a slight reduction. Lily-of-the-Valley has become very scarce during the last few days. A few bunches of Roman Hyacinths made a fair substitute, and were soon purchased. A few boxes of Narcissus Soleil d'Or are arriving in excellent condition from the Channel Islands. Some French Paperwhite Narcissus and Violets, including large bunches of Parmas, arrived last week, but the supply so far is very irregular. Owing to the mild weather the single Violets are not to be recommended after such a long journey.

Vegetables: Average Wholesale Prices.

	s. d.	s. d.
Artichokes, Jerusalem, per ½ bus.	2 0	2 6
Asparagus, Paris Green, per bundle	15 0	—
— — Sprue, per bundle ...	1 0	2 0
Beans, French, per lb.	1 8	2 0
Beetroot, per bus.	3 0	4 0
Brussels Sprouts, per bus. ...	5 0	6 0
Cabbage, per tally	8 0	12 0
Carrots, per bag	9 0	12 0
Cauliflowers, per doz	4 0	7 0
Celery, per doz. ...	2 0	5 0
Cucumbers, per doz	18 0	24 0
Endive, per doz. ...	1 6	2 0
Garlic, per lb. ...	0 6	0 8
Greens, per bag	2 6	4 0
Herbs, per doz bun.	2 0	4 0
Horseradish per bun	3 6	5 6
Leeks, per doz. bun.	3 0	6 0
Lettuce, Cabbage and Cos, per doz	1 0	1 6
Mushrooms, per lb.	2 6	4 0
Mustard and Cress, per doz. punnets	1 0	1 3
Onions, spring, per doz. bun. ...	2 0	4 0
Parsley, per bun ch	0 4	0 6
Parsnips, per bag ...	6 0	9 0
Radishes, per doz. bunches ...	1 6	2 0
Savoys, per bag ...	2 6	3 6
Shallots, per lb.	0 6	0 -
Spinach, per bus....	2 0	3 0
Tomatos, per doz lbs. ...	16 0	22 0
Turnips, per bag ...	6 0	8 0
Watercress, per doz.	0 8	0 10

REMARKS. The market continues to be well supplied with Grapes, including some Colmar, Black Alicante, and Almeria, but supplies of Muscat of Alexandria are, as usual at this time of year, limited. Among dessert Apples Cox's Orange Pippin is the chief sort. The following varieties of cooking Apples are available:—Bramley's Seedling, Dumelow's Seedling, and Newton Wonder. Tomatos and Cucumbers are now limited in supply, but Mushrooms are rather more plentiful. Green vegetables are abundant. *E. H. R., Covent Garden Market, December 5, 1918.*

GARDENING APPOINTMENTS.

Mr **J. C. Ash**, for the past 12 years Gardener to the late W. W. Howard, Esq., Highwood, Mill Hill, Middlesex, as Gardener to Mrs. F. M. Butler, Cotswell Manor, Faringdon, Berkshire.

Mr **J. S Buckby**, for the past 2½ years Gardener to Henry Beecham, Esq., Forest Hill, Hartford, Cheshire, as Gardener to the Rev. E. Earle, Bilton Grange, Rugby. (Thanks for 1s. for R.G.O.F. box.—Eds.)

Mr **F. Cook**, for the past 9 years Gardener to the Rev. G. H. Engleheart, Dinton, Salisbury, as Gardener to M. H. Beaufoy, Esq., Coombe House, Shaftesbury. (Thanks for 1s. for R.G.O.F. box.—Eds.)

Mr **F. Olver**, for the past 9 years Gardener to Lord Digby, Minterne, Cerne Abbas, Dorsetshire, as Gardener and Estate Manager to A. W. Page, Esq., Summernhill Park, Bath.

Mr. **E. E Thayer**, for the past 5½ years Gardener to Sir Richard Williams Bulkeley, Baron Hill, Beaumaris, Anglesey, as Gardener to E. C. Reed, Esq., Devizes Castle, Devizes, Wiltshire. (Thanks for 2s. for the R.G.O.F. box.—Eds.)

Mr **G. Bennett**, formerly for 10 years Gardener to W. G. Arkwright, Esq., Great Gravels, near Newbury, and previously for 10 years with J. Wyndham Smith, Esq., Aramstone, near Hereford, as Gardener to Lady Clarke Jervoise, Kirby House, near Hungerford. (Thanks for 1s. for R.G.O.F. box.—Eds.)

ANSWERS TO CORRESPONDENTS.

Fruiting of Cupressus funebris: *Beds.* Conifers in pots, and more especially Cupressus, Thuya, and Juniperus, often bear cones; there is, therefore, nothing unusual in your plants of Cupressus funebris coning. The cause of the occasional fertility of Conifers in pots is somewhat obscure, but it usually occurs with plants that are pot-bound or starved, and, if not accorded more generous treatment, the death of such plants may occur from exhaustion.

Grasses for Binding Land: *W. H. D.* The best of the grasses suitable for binding loose sandy areas is Psamma arenaria, the Marram grass. An article on sand-binding grasses was published in *Gard. Chron.*, October 2, 1909, p. 232.

Operations in the Rock Garden During Winter: *K. W. M.* During open weather in winter operations may be performed in the rock garden. An important work is top dressing the many plants that have grown out of the ground and made short stems. For this purpose use a compost of finely sifted loam, leaf-mould, and sharp sand. Work this material well in between the plants and growths, and it is especially valuable to such as are of tufted habit. For woolly-leaved plants, such as Androsaces, use more sharp sand and granite, or limestone chippings. Many plants that have grown too large or become crowded may be lifted and re-planted, renewing the soil in the process. If the soil is in the least degree stagnant or retentive, drainage in the form of broken bricks should be placed in the bottom of the hole and more sharp sand mixed with the soil. The re-building of the rock-work, where it is necessary, may also be done in winter, and this will permit of lifting all the plants and renewing or renovating the soil. During inclement weather labels may be overhauled, lists made of all indistinct ones on paper and fresh ones written under cover, ready for putting out in the spring. All dead stems and leaves should be cut away from the plants, and the whole place made tidy. Then put on the top dressing or mulch to take the place of dead leaves, in order that the plants may not be unduly exposed to the weather.

Shoddy as Manure: *J. C.* Shoddy by the truck load may be obtained from Messrs. Hollingshurst and Co., 112 Fenchurch Street, E.C. 3, and Messrs. Herbert Smith and Co., 9, Mincing Lane, E.C. 3. It is scarce at present, and there is usually some delay in delivery. The price varies according to the distance from the works.

Communications Received.—C. W.—J. M. W. F. R. P. H. E. E. M. W. L. W.—J. A. W. S. C. P. R. W. H. W. R. A. O. W. H. F. H. J.—J. H. & Son.—J. P. W. L.—J. H. W.—Hon. bem. I. J. F.—D. T.—Donedine.—W. R. G. B. C. E. T. E.—Miss M. G. B.—E. M. B. T. H.—T. D. A. M. W. H. S. H. R. W.—J. H. J. K. R.—L. O. N. E.

THE
Gardeners' Chronicle
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CONTENTS.

ILLUSTRATIONS.

THE CHRYSANTHEMUM IN CHINA.

I PROPOSE, for the benefit of those who may hereafter be interested in the literary or historical aspects of the Chrysanthemum, to place on record the existence of a most valuable paper which has apparently escaped the attention of all early European writers who have dealt with the subject.

It is noteworthy, in this respect, that it deals with the flower from a first-hand knowledge by an European author at a time many years prior to the introduction of the first large-flowering Chrysanthemum into Europe. The paper is of value because of the precision with which the writer describes the flower and its cultivation in China at a time when the object of his care was not even known as a Chrysanthemum.

The identification was brought about by the merest chance. Being latterly engaged in some researches in Chinese literature for details of the life and labours of that famous old Chinese Chrysanthemum grower and poet, T'ao Yuan Ming, I was led into an out-of-the-way channel from which much literary matter of peculiar interest was obtained. Considering the numerous writings about the Chrysanthemum, botanical and horticultural, which resulted from its introduction by Blancard in 1789, it does seem to me to be very curious that none of the authors that dealt with the newcomer for the first quarter of a century or so should have made any reference to the article about to be referred to.

It may be that the title of the article, even supposing our older writers ever came across the work in which it is contained, may have thrown them off the track, or it may be that the work was inaccessible, or not thought likely to be of service in connection with the subject.

The Chrysanthemum has been the victim so to speak, of considerable diversity of names. In the seventeenth and eighteenth centuries European botanists generally regarded it as a Matricaria. Breynius, Plunkenet, Kaempfer and others among the number. Philip Miller's historical curiosity (No. 2,412, anno 1764), referred to in the 8th Edition of his Dictionary, was described as Matricaria indica, although some authorities claim it as a small-flowering Chrysanthemum.

When Blancard introduced his novelty into France in 1789 it raised some discussion among French botanists. M. Ramatuelle, the first author to describe the plant from European-grown specimens, called it Anthemis grandiflora (see *Jour. d'Hist. Nat.*, 1792, p. 233). Although Ramatuelle considered the flower to be an Anthemis he admits (p. 246) that the name Matricaria had already been applied to it. Willdenow and Moench also gave it the same generic name, but differed in the specific. It seems useful to record these few facts superficially, in order that the reader may see how easily this old paper may have been overlooked, in a cursory search, even indeed if that were made.

Some of Ramatuelle's contemporaries considered Blancard's flower to be the Chrysanthemum indicum of Linnaeus's *Species Plantarum*, but he, and also Sabine later, rejected this idea, and the latter writer, after fully discussing the question, proposed the name C. sinense for the newcomer from the Far East, which had then begun to enjoy a great degree of popularity both in England and in France.

I now come to a fact which led me to alight upon this particular article. Many years ago, when the late Mr. Shirley Hibberd commissioned me to write the text for a special double number of *The Gardeners' Magazine* devoted exclusively to the Chrysanthemum, an old friend of mine in China sent me a quantity of valuable matter relating to the history and literature of the flower in that country. The Chinese name, or perhaps it would be more correct to say, the name for the Chrysanthemum in the province in which he laboured, is Chuhwa, and that name has ever since remained in my memory.

During my work I had occasion to consult Cordier's *Bibliotheca sinica*, in which there appears a reference to a French work dealing with the history, manners, etc., of the Chinese.

Cordier fortunately gives a list of many books on Chinese botany and allied subjects, and in his mention of the work just alluded to he briefly indicates the contents, which encouraged me to pursue still further my researches in that direction.

The book in question is one of a set of sixteen volumes, quarto, and bears the following title: *Memoires concernant l'histoire, les sciences, les arts, les moeurs, les usages, etc., des Chinois*. Par les Missionnaires de Pekin. 1ème troisième. Paris, 1778.

Much of the first part of this volume is taken up with accounts of the lives of celebrated Chinese emperors, statesmen, poets, and others—some with portraits. There is also an account of Chinese greenhouses. After this come notices of various plants, shrubs, etc., in China, and it was to this part that my especial attention was directed.

To the ordinary reader interested in the Chrysanthemum and possessing no knowledge of the Chinese vernacular there is but little in the chapter headings to suggest that there was anything about the Chrysanthemum therein.

These chapters bear the following titles: 1. Nenuphar de Chine. 2. Le Yu-kin. 3. Le Tsieou-hai-tang. 4. Le Mo-li-hoa. 5. Le Cha-tsiang-d'eau. 6. Le Lien-Kien ou Ki-teou. 7. Le Kin-hoa ou la Matricaire de Chine. 8. Le Mouton ou Pivoine. 9. Le Yé-hiang-hoa. 10. Le Pe-ge-long. 11. Le Jujubier. 12. Le Cheme. 13. Le Chataignier. 14. Les Oranges. Canges.

My eye lingered over No. 7. The name, as I involuntarily mumbled it, sounded strangely like Chu-hoa (Ch hard), and it is not making any pretence to a knowledge which I do not possess to say that anyone unfamiliar with the various systems of transliteration from the Chinese character into Roman can see that there was good reason for my assumption that these two names, differing as they do in spelling, might possibly mean one and the same thing, i.e., Chrysanthemum.

Again, the French writer, in giving the equivalent in his language, Matricaire, at once reminded me of the current appellation of the flower in those days immediately preceding the introduction of the Chrysanthemum into Europe.

What at first was a mere guess was soon proved to be the fact. The internal evidence in the article showed conclusively that the Kin-hoa was the Matricaria of our seventeenth and eighteenth century botanists, the Chrysanthemum indicum of the *Botanical Magazine*, the Anthemis of Ramatuelle, and the Chrysanthemum sinense of Sabine.

In the space at my command it is not possible to reproduce the article *in extenso*. The most I can hope to do is to draw attention to it and give in a condensed form just a few of its most salient features.

In its entirety this French Jesuit's treatise occupies seven or eight quarto pages, and it was evidently compiled by one of those missionary writers at least twenty-five years before Ramatuelle's description, for the simple reason that although Vol. III. of the *Memoires* bears upon its title-page the date 1778, we read on the last page, without a signature, "à Pé-King ce 3 novembre, 1767." Things moved slowly in those days, and the date of compilation and that of publication were separated by difficulty and delay in the journey between the two countries.

Now a few words about the article itself. The writer begins by telling us that the Kin-hoa, or Matricaria, is one of the most ancient plants known. It is, he says, mentioned in the Li-Ki of Confucius. I have not yet had time to look up a translation of that work, but I know second-hand that our Chrysanthemum is referred to in it by the great philosopher.

We learn also from this authority that in the first dynasty of the Tcheou (T'Chow) this Matricaria was represented in the embroidery on the garments of the Empress, the princesses and the principal ladies of the Court. If the herbarium attributed to Chin-nong is really of this Emperor, China has, says the writer, probably the first botanical book in which the flower is mentioned.

Regarding the popular superstition attaching to the Chrysanthemum, both in China and Japan, that a drink made from the Chrysanthemum ensures long life and preservation from evil, the writer tells us much about the same story concerning the Kin-hoa. A reference is also made to the native poets and their mentions of the flower.

It is curious from that point of view that up to now I can only make sure of one reference to the Chrysanthemum by Confucius. I have looked carefully through the Shi King, another of his books, and noted the flowers he speaks of there, but the Chrysanthemum finds no place in that book. On the contrary, later poets yield a little crop of references to this popular autumn flower, and I will mention just barely T'ao Yuan Ming (365-427 A.D.), who also bore the names of T'ao Ch'ien, and T'ao Tsien in Chinese and To-yem mei in Japanese; Tu Fu (712-770 A.D.), one of the greatest names among the Chinese poets; Po-chu-i (772-846 A.D.); and Sau K'ung T'u (834-903 A.D.), without coming further down the ages.

This old Jesuit missionary next proceeds to make comparisons with the Kin-hoa and some of the florists' flowers, notably the Auricula, which had then been much improved but which a century before was as little esteemed as the Kin-hoa or Matricaria.

He quotes Tournefort's description of the Matricaria and identifies the Kin-hoa with it. There are, according to the Chinese, two species—the cultivated and the wild. The cultivated ones are so numerous that they would require a long list to include all the kinds. He describes the foliage and the way in which it varies in different plants. As for the flowers, they are of so many colours and forms that to name them all would be a lengthy undertaking.

We have before us, continues the writer, a book printed at the Palace in which three hundred sorts are mentioned. How many have appeared since cannot be told—every year new ones are raised, and to know them all is quite a science.

The reader may almost say with me that this writer might actually be talking about the Chrysanthemum of the present day, and when

starts with but remark on cultivation the becomes still more apparent. He tells us that in China there are books on the culture of the Matricaria, just as in Europe there are some on Tulips, Carnations and other flowers. The requirements of the Kiku-hoa for successful culture are (1) an open position and fresh air which can be easily renewed. A narrow enclosure within four walls is a prison for this flower. The soil must be rich, well manured, prepared beforehand, and renewed every year. (2) The Kiku-hoa is propagated, firstly, by seed; secondly, by layers; thirdly, by grafting; fourthly, by suckers. These methods are then dealt with seriatim, and bear a strong resemblance to the directions of a twentieth-century European cultivator.

(3) When the Matricaria has done flowering, it is to be cut down to within 5 inches of the root, the soil stirred and manured, and as danger of frost approaches it must be covered with straw. As soon as the warmth of spring makes itself felt the plants are uncovered and watered, and they then throw out shoots; some florists leave only two or three of them and cut out all the rest; others take up the old stool entire and divide it into several parts, transplanting them in a soil prepared beforehand.

Briefly, the other directions are a reminder (4) that the Matricaria cannot stand too much dryness or too much wet. Rain or river water is best. Liquid manure as directed should be applied. Watering is to be done morning and evening, but the foliage should be moistened in the morning only. Too much strong sunshine is not good, but plenty of air is required. In the Emperor's gardens the plants have shelters made of matting to protect them.

The branches are liable to be broken by the winds; they should be tied to supports or stakes similar to those used in France for Carnations. Fifthly, only two stems are left on a plant; if others appear they are pinched out with the nail. Sixthly, amateurs leave but one bud on each stem; when it is as large as a Pea, manure water is given until it begins to open.

Then the writer goes on to tell us what the properties of the plant are, that the flowers last a month or more on the plant. The Emperor's apartments are decorated with this flower from mid-autumn to the end of winter. In a word, one might almost say that these cultural directions, instead of having been written in China nearly a couple of centuries ago, were compiled by one of our modern, successful, English cultivators less than a month ago, so closely do they approximate to our up-to-date cultivation.

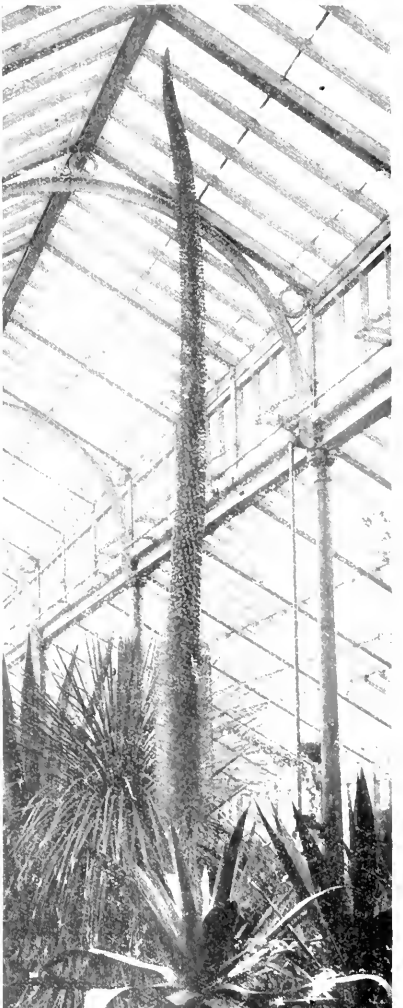
It is remarkable that while this exhaustive treatise lay hidden away in the pages of this old volume of *Memoires* the Chrysanthemum should have been introduced into Europe as a new plant, which it undoubtedly was, and that the growers had to learn by practice little by little the various details of cultivation which in the ultimate end so closely approaches that which the Chinese florists had long before adopted and which we Westerners might have imitated straightaway as soon as Blancard's introduction took place at the exhibition of the Chinese mode of culture so amply set forth in the treatise had then been widely made known.

Finally it is interesting to add that we are told that the flower enters into various decoctions in combination with Tea and gives its name to a blend which is used to form a compound pill.—*C. Harman Payne.*

TREES AND SHRUBS.

COTONEASTER ZABELII.

Of the many species of Cotoneaster which have been introduced from China during recent years C. Zabelii appears to me to deserve a high place in cultivation. It is most nearly allied to the European C. integerrima and C. tomentosa, but differs from them in having more numerous flowers in a cluster and in some other respects. The 4-10 flowers are followed by large, round or Pear-shaped fruits, one-third to half an inch long, of a crimson colour, and as the clusters are nodding or drooping on a fairly long peduncle they are highly conspicuous during the autumn and winter. As a wall shrub it would be more ornamental than C. Simonsii when in fruit, which is saying a good deal, seeing that the latter has found its way over most of Great Britain as a wall shrub, for planting in shrubberies or as isolated bushes. If C. Zabelii proves a success it may displace the old favourite for one purpose or another. Its leaves are linear and covered beneath with a yellowish grey felt, while those of C. Simonsii are paler beneath and merely hairy.—*J. F.*



[Photograph by C. P. Raffill.

FIG. 92.—AGAVE ELLEMEETIANA FLOWERING IN THE SUCCULENT HOUSE, KEW.

AGAVE ELLEMEETIANA.

AGAVES, as commonly known in gardens, have stiff leaves armed with formidable spines, and branched flower-spikes, the best known example being A. americana, popularly called the American Aloe. There are, however, a number of species with comparatively soft, unarmed leaves and flower-spikes of the bottle-brush pattern, and one of the largest of this group is A. Ellemeetiana, a Mexican species, first flowered in the Wilson Saunders' collection in 1867, and many a time since in other gardens. The illustration in fig. 92 shows a fine example of it in flower in the Succulent House at Kew, the spike nearly touching the roof, which is 15 feet high. The leaves are about 2 feet long and 6 inches wide, glaucous green, and of fleshy appearance. The flowers are arranged densely in pairs on the greater part of the spike, which is as rigid as a Larch pole, and they develop in bands after the manner of Kniphofias. They are yellow-green. The plant is monocarpic; that is, it dies after once flowering, but it sets seeds freely, and is therefore easily preserved. At Kew this Agave flowers when it is about twenty years old. These soft-leaved species are less hardy than A. americana, and they are liable to injury, as they are awkward to move and are easily bruised. Another species of the same group, and not unlike A. Ellemeetiana is A. attenuata, but it has a nodding, not erect, flower-spike, and is remarkable in developing a long, woody stem before it flowers and dies.

ON INCREASED FOOD PRODUCTION.

POTATO KING GEORGE.

THE variety King George is one of the best second early Potatos, and is immune to Wart Disease. It is a white, oval, kidney sort, and has few equals in cropping. By planting sprouted tubers early the crop may be lifted in time to plant Leeks, Savoys, and other Greens, and it keeps good until March. I find it good practice to plant second earlies such as King George and Great Scott and lift them in August before late blight becomes troublesome. *Japonica.*

ELECTRIFIED SEED.

MR. W. GUY has grown on an allotment near Parkstone, Dorsetshire, a row of Savoys of enormous dimensions from electrified seed. One plant measured 4 feet 1 inch across, weighed 13½ lbs., and one of the outer leaves measured 24 inches in length and 20 inches in breadth. The plants in the adjoining rows were grown from unelectrified seed and were of ordinary dimensions, weighing between 2 lbs. and 3 lbs. each. *Dr. Morton, Moorcroft, Parkstone.*

VEGETABLE MARROW GROWING.

THE Food Production Department states that a grower in Berkshire who had 6 acres of land on which he could have planted nothing else this year responded to the invitation of the authorities to grow Vegetable Marrows by sowing this area with Marrow seed. It produced 24 tons 3 cwt., and he sold the crop through the Berkshire Fruit and Vegetable Society—which works under the F.P.D. Scheme for marketing surplus produce—for £144.

TENURE OF ALLOTMENTS.

IT is found that many holders of allotments under the Cultivation of Lands Orders are still in doubt as to the period for which they hold their plots. In order to make the position clear the Food Production Department has issued the following statement on the subject. As the result of recent legislation (the Corn Production (Amendment) Act, 1918 (Section 1)) allotment holders under the Cultivation of Lands Orders are now secure in the occupation of their plots until the expiration of two years from the "termination of the present war" (which term has to be defined by Parliament) except in those

cases where it is shown to the satisfaction of the Board that the land is required earlier for building or other special purposes, or where the compensation payable if the land is retained would be in excess of the value to the nation of the food produced. If, owing to the land being required for one or other of the above-mentioned purposes, any such allottee has to surrender his plot before January 1, 1920, he will be compensated by the Board of Agriculture for the growing crops, etc.

Powers conferred by the Small Holdings and Allotments Act, 1908, however, provide the means of securing longer periods of possession for those allotment holders under the Cultivation of Lands Order whose land is not required for the purposes already specified. Those powers enable Local Allotment Authorities in agreement with owners to take allotment land for long leases.

ONIONS ON PLOUGHED GRASS LAND.

I NOTE, in your article on "Ploughed-up Grass Land," that you advise planting Onions on such land, and that they have proved a success. I would advise those who contemplate planting lea ground with Onions in the coming year to first ascertain if wireworms are present in the soil. Last spring I planted 5½ acres of lea ground with Onions and lost nearly every plant; the wireworms destroyed them wholesale, notwithstanding that the ground received a good dressing of soot and salt. *G. Meiklejohn, Ohey Lee Gardens, Queen's County.*

PEAS UNDER GLASS.

THE present month is a suitable time to make the first sowing of Peas either in pots, boxes or borders. For sowing in borders I prefer the varieties Duke of York, Duke of Albany, and Royal Warrant; when sown in the open these varieties attain to a height of about 5 feet, but when sown in pots they seldom grow taller than 4 feet. Chelsea Rival and Little Marvel are suitable for growing in pots and boxes in low houses. Peas grow well in fibrous loam mixed with manure from a spent Mushroom bed. The pots should be 10 inches in diameter, and well drained. They should be three parts filled with soil, and 12 sound seeds will be sufficient in each pot. Cover the seeds with 1½ inch of soil and then well water the soil. Guard against mice and slugs. When the plants are about 3 inches high they should be thinned to six of the strongest. At that stage top dress the roots with some of the soil used for sowing. Tie each plant to a neat stick and, as growth develops, give further support. Remove all side growths, but one must judge by the variety before the points of the main growths are removed. Admit air freely, and use fire-heat only in times of severe frosts. Failure is sure to follow should the soil be allowed to get dry. When the pods start to form the use of diluted liquid manure at every alternate watering will prove very beneficial to the plants. Close the house in the afternoons to hasten the swelling of the pods. An additional sowing should be made in January in pots and the plants grown on in pots; by the time the plants of this late sowing are bearing pods early Peas on south borders will be making considerable headway. *C. Davis, Holy Well Park Gardens, Ipswich.*

POTATO MAJESTIC.

I PLANTED on May 6 last one cwt. of seed tubers of Majestic Potato, and the plants were grown in ordinary field conditions. The yield was 40 cwts. of clean, healthy tubers, with about one quarter of the total seed size, and no small ones. The seed was supplied to me "as grown," which was in accordance with the Government Potato Order, and was by no means a good sample. It can, therefore, be easily understood that if the tubers had all been of proper seed size the quantity purchased would have planted a wider area, with a correspondingly greater yield. *John Robertson, Bellefield Gardens, Lanark.*

SOME OF THE NEWER ROSES.

OLDER ROSES OF 1918.

CONSTANCE (Perpet. Duchet). A sport of Ye's Austrian Briar Hybrid, and a better grower than Rayon d'Or, though not always; not so full nor so deep in colour.

MERRY DICKSON (H. Dickson). A grand garden Rose. Austrian Briar Hybrid; extra ordinarily thorny, with large, rather loose, nearly full blooms. Well worth growing, and succeeds best where it does not get early sun.

NAIAD (G. Paul). Erect, passing to pinkish white. Large, only semi-double, but very fine when open, and shows the abundant anthers. An Austrian Briar Hybrid.

ROSES INTRODUCED IN 1918.

The following are Hybrid Teas only:

CHARLES GOODWIN (A. Dickson). A fine and free-blooming Rose, pale cream, deeper in the centre, of very fine shape and good size; very beautiful.

CLEVELAND (H. Dickson). Another good variety; the blooms show a mixture of colours, and possibly it is some relation to that fine Rose Gorgeous; a reddish copper tone with yellow at the base. Fairly vigorous, of fine shape and size and full.

CRIMSON CHATENAY (Merryweather). A crimson seedling from Mme. Abel Chatenay, though one might not suspect it; of good colour and growth, and likely to be a fine decorative Rose.

DONALD MACDONALD (A. Dickson). A very

FLAME OF FIRE (McGredy).

fine Rose, one of the best rich crimsons, with dark anthers; vigorous and free.

ECLIPSE (B. R. Cant). A very attractive climbing sport, very large blooms, in a warm shade of peach and pink, produced in clusters. A Pillar Rose.

LEMON PILLAR (G. Paul). This climber I have seen from its early stages. At first pruned hard, it was not free, but is now free on a pillar. It is a Hybrid Noisette, much resembling Marechal Niel (one of its parents) but paler, large, full and good. A distinct gain, and will probably be the parent of other good Roses.

PRINCE MARY (Hobbies). A fine full Hybrid Tea Rose, one of the best rich crimsons, with dark anthers; vigorous and free.

QUEEN (B. R. Cant). A very attractive climbing sport, very large blooms, in a warm shade of peach and pink, produced in clusters. A Pillar Rose.

LEMON PILLAR (G. Paul). This climber I have seen from its early stages. At first pruned hard, it was not free, but is now free on a pillar. It is a Hybrid Noisette, much resembling Mme. Marechal Niel (one of its parents) but paler, large, full and good. A distinct gain, and will probably be the parent of other good Roses.

FLAME OF FIRE (McGredy). Probably one of the best decorative Roses we have (see fig. 94), like a glorified Mme. E. Herriot. Strongly recommended, though at present I am not sure as to its growth. I think it is "fairly vigorous." Orange flame in colour.

FLORENCE SPAULL (B. R. Cant). Rosy pink in improved Helen Keller; large and full; very promising.

HENRIETTA (Merryweather). A rodless Rose, fairly full, orange-crimson. Free, a good grower, and holds its head up better than Mme. E. Herriot. A bedding variety.

FIG. 94.—FLAME OF FIRE.

HON MRS R. C GROSVENOR (B. Cant). Colour, pale flesh, centre orange. A garden Rose of fair size, free, pretty, but not very full.

MRS. A. GLEN KIDSTON (A Dickson).—A very pretty bedding Rose, of mixed colouring, becoming deep rose; free and well formed.

MRS. BRYCE ALLAN (A Dickson and Sons).—An exhibition Rose of fine type; carmine-rose, erect, highly scented, and very promising.

MRS. DUNLOP BEST (Hicks). Reddish-apricot and yellow; very pretty colouring. A good garden Rose, and apparently free from mildew.

MRS. A. W. ATKINSON (Chaplin). — Ivory-white, large, full, pointed, and with very thick petals. Has stiff, strong wood, is fairly vigorous, looks like a cross between Frau Karl Druschki and Marchioness of Londonderry. I consider it was worthy of a Gold Medal in 1916.

MRS. CHAPLIN (Chaplin).—A Rose similar to Mrs A. W. Atkinson, but with a little pink in it; a fine exhibition variety.

FIG. 94.—ROSE NELLIE PARKER. COLOUR CREAMY YELLOW, DEEPER YELLOW IN THE CENTRE.

MRS. MONA HUNTING (Hugh Dickson).—A delightful garden Rose, not quite large enough for show purposes, and might have greater length of petal. It is a chamois-yellow, paling somewhat as it opens. Quite full, opens well.

NELLIE PARKER (H Dickson) (see fig. 94).—One of the best Roses. A grand, full bloom of fine shape, a fairly good grower (perhaps more than that), free, and every bloom seems to come good. Colour, creamy-yellow, deeper yellow in centre, and sometimes flushed with pink.

PRINCE CHARMING (H Dickson). A bedding Rose, almost single, and I have placed my plant among the singles. Reddish colour on old gold; free, and lovely in the bud.

MODESTY (McGredy).—A grand Rose, either for garden or show purposes, and a good grower. The colour is creamy-white flushed with deep pink. The bloom lasts very well either on the plant or when cut and the stem placed in water.

RED CROSS (A Dickson and Sons).—A striking Rose, and useful; erect, fine crimson colour, free, and vigorous; a fine bedder.

TIPPERARY (McGredy).—A yellow garden Rose, of exceptional freedom. It promises to be most useful for bedding.

W. C. GARNT (A Dickson and Sons).—Bright scarlet, with the backs of the petals crimson maroon; fairly vigorous, of fine shape and medium size; very branching and free. A good garden Rose.

OTHER ROSES OF 1916.

CLIMBING IRISH FIREFLAME (A Dickson and Sons).—Like the beautiful original, but a climber.

ISOBEL (McGredy).—One of the best singles, and very distinct. It is described as carmine-red, flushed orange scarlet, but with me it has had lovely flowers of a rosy red tone, beautifully shaded, with centre yellow. A good grower, free and attractive.

QUEEN OF THE BELGIANS (Hicks). Rich salmon-pink and very free; a colour wanted in the singles; very pretty.

ULSTER GEM (H Dickson).—Yellow, free and good. Like many yellow roses, it pales as the flower ages. Quite a fair grower and striking.

PAUL'S SCARLET CLIMBER (W. Paul).—Undoubtedly one of the best Hybrid Wichuraianas; bright scarlet, shaded crimson; free, very lasting and good. Perhaps not so wildly vigorous as some Wichuraianas.

SILVER GEM (G Paul). — A lovely, rose-coloured, almost single, dwarf Polyanthus Rose, with paler eye. Foliage variegated; very distinct and good. *L. C. B. Norris Elgie, Ufford Manor, Louth, Lincolnshire.*

(To be concluded.)

The Week's Work.

THE KITCHEN GARDEN.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

Broccoli.—In many districts there is the greatest difficulty in wintering Broccoli, no matter how carefully the plants and ground have been prepared. Placing the heads of the plants near the ground and facing them to the north is the simplest way out of the difficulty, as few need to be told that the stems of Broccoli are most susceptible of injury from frosts. Open a rather deep, sloping trench on the north side and then, with the help of a spade inserted well behind the plants, carefully place them in an oblique position with the heads facing north. The roots should not be disturbed more than is necessary. Cover the roots with soil made rather firm and lightly cover the stems with soil. The next row of plants should then be laid over, and so on, until the whole are finished. If the work is done carefully in fine weather the plants will receive no great check to growth.

Cabbages.—Hoe the soil, whenever the work is possible, between the rows of autumn-planted Cabbages, whether weeds are present or not. Hoeing keeps the ground sweet, and allows the air to penetrate freely to the roots. It also stimulates growth, and protects the stems of the Cabbages from injury by severe frosts.

Seasonable Remarks.—Heavy land should not be trampled on when it is wet from rain or in a moist state after a thaw, as when in this condition soil binds readily. The rougher clayey land is dug in autumn and winter the easier will frost penetrate to a good depth. Sharp hoar frosts lead us to expect severe black frosts, which generally last longer, and are much more penetrating. Bracken and garden mats should be ready at hand for covering salad plants and other vegetables that hard frosts would injure. Examining Onions and Potatos in store will provide work for the staff indoors during wet weather. Every care should be taken of seed tubers intended for planting next season. Home-saved seeds of Peas, Beans, and other vegetables should be sorted, and all unsound ones discarded. Beans especially were late in ripening, and should be thoroughly dried before being stored.

THE ORCHID HOUSES.

By J. COLLIER, Gardener to Sir JEREMIAH COLMAN, Bart., Gatton Park, Reigate.

Miltonia.—Plants of Miltonia vexillaria, M. Bleuana, and their hybrids, are growing steadily. As the roots are now very active the compost should not be allowed to become very dry, but sufficient water afforded it to keep the Sphagnum moss on the surface alive and fresh. These growing plants will need constant attention, as the young leaves frequently adhere to each other so firmly that they soon become crumpled if not carefully separated, which is best done by means of the thin end of the handle of a budding knife. A brown, damp-looking, outer sheath at the base of the young growth often clasps the stem so tightly that the roots push upwards inside it instead of growing into the compost. This sheath should be removed in pieces without causing injury to the plant. The leaves sometimes show signs of damping at their tips at this time of the year; this defect is best obviated by keeping the roots a trifle drier, having a slightly drier atmosphere and affording a little extra ventilation. Plants of M. v. Leopoldii and M. v. superba that have recently passed out of flower should be repotted, if this operation is necessary, when the young growths commence to send out new roots from their bases. The hybrids M. Bleuana and M. Hyeana, which are irregular in their season of flowering, may be dealt with in a similar manner. Should cold weather necessitate the use of more fire-heat, keep a careful watch for yellow thrip and other insect pests, and, as a precaution, dip the leaves and growths in an insecticide at least once every two weeks.

Dendrobium.—Plants of Dendrobium Wardianum, D. crassinode, D. aureum, D. nobile and their numerous hybrids that are developing flower-buds may be removed from their resting quarters into a house where the temperature does not fall below 55°. If no other structure is available the Cattleya house will suffice until the buds are nearly developed, when the plants may be placed in a light position in the warmest division. At present only sufficient water should be applied to the roots to keep the pseudo-bulbs plump, as over-watering and high temperature while the blossom buds are developing is conducive to irregular flowering. Growth will be very slow at this season, and the object should be to encourage the buds to develop without causing growth to start at the base of the plant. Where numbers of plants of D. nobile are grown, the flowering period may be extended over several months by placing the earliest specimens in a cool, dry house to rest, and as soon as the growths are matured, bringing a few plants into a warmer house at intervals. The bulk of Dendrobiums will flower in the spring, and these plants should remain in their resting quarters until the flower buds are apparent. Such late flowering Dendrobiums as D. Parishii, D. Bensoniae, and D. superbum having completed their current season's growth, should be placed near the roof-glass in the Cattleya house during their resting season.

PLANTS UNDER GLASS.

By E. HARRISS, Gardener to Lady WANTAGE, Lockinge Park, Berkshire.

Coleus thyrsoideus. This winter-flowering stove plant has been grown here in much cooler conditions than is usually recommended. The only apparent difference is that the plants are much dwarfer than usual. It is now coming into flower, and a drier atmosphere will be maintained to counteract the cooler conditions. Now that growth has practically ceased water must be applied with extra care. A little stimulant used about once a week will meet all requirements in this respect. A little air should be admitted to the house whenever the weather is favourable, and, with careful attention to cultural details, the plants will continue to flower all through the winter.

Hippeastrum (Amaryllis). Select a few of the most promising bulbs of Hippeastrum for placing in the forcing house. Remove an inch or two of the old surface soil and apply a top dressing of rich material, such as a mixture of fibrous loam, leaf mould, crushed bones, and sand. Examine the drainage and see that it is perfect, as it is essential that surplus water should pass away freely.

Gardenia. Let plants of Gardenia which are forming their flower-buds have liquid manure from the farmyard, or, failing this, a concentrated fertiliser. It nearly long is troublesome, take measures to destroy the pest before the blooms begin to expand or many of the trusses will be spoilt. It is an excellent plan to lay the plants on their sides and vigorously syringe them with an insecticide; if this be done once a week the plants will be kept clean. A minimum temperature of 55° should be maintained while the flowers are developing.

Chrysanthemums. If plenty of good cuttings are available a large batch of Chrysanthemums should be propagated at once, and the old stools discarded. It will save labour if cuttings of the decorative varieties are inserted in ordinary cutting boxes. Use an open, sandy compost, and see that it is made quite firm in the boxes before inserting the cuttings. The shoots will root readily in a propagating case, which may be placed on the stage of a greenhouse. When rooted, grow the plants near the roof-glass in a cool house.

THE HARDY FRUIT GARDEN.

By JAS. HUDSON, Head Gardener at Gunnersbury House, Acton, W.

Birds and Fruit Buds. From observations extending over several years I have noted that the amount of injury done to fruit buds by birds differs in extent in different years. The degree depends, doubtless, upon the amount of food the birds are able to obtain. Sparrows are more destructive to Red and White Currants and to Gooseberries than any other birds; at least, that is my opinion. After a sudden fall of snow, and whilst this still lies upon the ground, the birds are unable to find food in the soil, and it is at such times that some birds devour the buds of fruit trees. The best deterrent to the house-sparrow is black thread strung from bough to bough as soon as the bushes have been pruned. Where these fruits are trained against walls, old pieces of garden netting serve the same purpose admirably. Birds of the finch tribe are more disposed to attack the buds of Plums than those of any other fruits. The gun has to be used in extreme cases, although I am very reluctant to destroy birds by shooting them. Black thread may be used for these bigger trees also; the reel of thread should be thrown over the tree from side to side, and with two operators this work will be considerably expedited. In bad cases of bird attacks the fruit quarters that have provision for protecting the bushes by nets arranged so as to make a kind of cage may have the nets placed in position, but this should not be done unless other means have failed, for the birds destroy many insect pests. I have never observed any harm to Cherry trees, on the contrary, birds find a large amount of insect food in those trees. I never destroy birds' nests.

Nailing and Tying Wall Trees. Let the work of nailing and tying the shoots of wall fruit trees be hastened as speedily as possible while mild weather continues. Of the two, I think nailing is a more pleasant operation than tying. Where shoots are scarce an excellent substitute may be found in the young, slender tops of the Willow. A little practice is needed, but after a time the work may be accomplished fairly easily; this method takes the place of shreds to a safer degree than does the use of tarred string. Old shreds harbour insects; not so the Willow tips, whilst these latter will in due time decay and not do any harm to the branches. Keep a close watch for any old ties that may be so tight as to compress the bark, which, in the case of such fruits as Cherries, might cause gumming. In the case of wires, any undue pressure against the shoots must be eased by placing suitable material between the bark and the wire.

Raspberries and Similar Fruits. The final thinning of the canes of summer fruiting Raspberries should be attended to before the end of the present month. Leave the strongest shoots the longest when they are tied, shorten those of medium length half way, and cut the weakest canes still harder. In this way it is possible to make the best use of the available space. If there are no facilities or time for training the shoots in this way they may be simply tied together without any stakes, as is done in market gardens. Do not attend to the autumn fruiting Raspberries until the spring. Get the pruning of all Gooseberries, even on the cordon system, out of hand and the plants tied. If the presence of American Gooseberry mildew is suspected, spray the bushes with lime sulphur when the work of pruning and training is finished. Brambles of the Loganberry section should be pruned and tied before a fall of snow impedes the work.

FRUITS UNDER GLASS.

By W. J. GUISE, Gardener to Mrs. DEMPSTER, Keele Hall, Newcastle, Staffordshire.

Propagating Vines. If young canes are required for planting next year, select the best ripened prunings from the strongest and healthiest vines for propagating. Undoubtedly the best method of increasing the Grape Vine is by "eyes" inserted in small pots in January. In the meantime, tie the prunings in small bunches labelled with the name of the variety, and heel the cuttings in on a south border.

Propagating Figs. Figs may be increased from well-ripened buds in the same manner as Vine eyes, or by cuttings 3 or 4 inches long made from well-ripened shoots. The former make plants with clean, straight stems the first season, and Figs propagated in this manner may be grown as miniature standards. By adopting the latter method, smaller, but more compact bushes are formed. The shoots for cuttings should be selected when pruning the trees and inserted in a cold frame until January.

Early Strawberries. With carefully prepared plants it is possible to obtain ripe Strawberries very early in the season, although it is not advisable to attempt this on a large scale, for, with little or no sun early in the year the fruits lack flavour. Far better results are obtained by starting the plants another month or even six weeks hence. For very early forcing the pots should not exceed 5 inches in diameter, the plants should possess a ball of healthy roots, and have firm, well-ripened crowns. If a suitable forcing house is not available, a sharp pitched Melon pit fitted with narrow shelves at a distance from the roof-glass sufficient to allow the plants space when they are in flower, offers a good substitute. A bed of leaves and stable litter should be placed under the shelves, turning and renovating the materials at intervals as occasion demands. Some growers plunge the pots in the fermenting material, but directly the flower spikes appear the plants should be placed on a shelf near the roof-glass, as an excess of bottom heat encourages the development of soft, elongated leaves and weak flower stems. Before the plants are introduced to the forcing house the pots should be washed, the drainage examined to ensure a free passage of water, and all decayed foliage removed. Strawberries grown under glass are very liable to attacks of mildew and red spider, and for this reason it is advisable to dip the plants in sulphur water. Maintain a temperature of 40° to 45° at night and 50° by day. No hard-and-fast rule can be laid down in this respect, as it sometimes happens that 40° or more at night may be followed by 55° or 60° for a few hours on mild days. Careful attention in watering with tepid water is essential, for at this early stage there is a risk of giving too much moisture, whilst drought at the roots would be equally injurious.

THE FLOWER GARDEN.

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

Lawns. Take advantage of a fine day or two to give the lawns a final clean up for the year. Even the latest Oaks should have shed their leaves by now, and with the leaves there will be bits of stick and various other unsightly objects gathered since the previous general cleaning. If time permits imperfect parts of the turf may have a slight dressing of old compost sprinkled upon them. The material will get washed in very soon, and the evidence of its having been applied is not seen till spring, when denser vegetation appears. It also saves labour to apply it now instead of in spring, when gardeners, it is clear, will be busier than they have ever been.

Pampas Grass. Large clumps of Pampas Grass, which is not quite hardy, are very handsome on broad lawns. This year the spikes were not produced till well into November, owing to the freezing of the plants last winter. The value of the plumes for decoration is well known, and where they are required for this purpose they should be cut at once, being careful that the hands are not cut by the deeply serrated edges of the leaves in doing so. Both this grass and Tritomas of kinds, where winters are usually severe, should have littery straw drawn over and around the stools which, notwithstanding that the leaves may be destroyed by frost, retain enough vitality to make good growth and produce flowers the same year. The litter from stables possesses a certain amount of manurial value and the food will be washed down to the roots by rain and melting snow.

Protecting Iris Susiana and Other Tender Plants. Iris Susiana is developing new growth, and though it is hardy at least, in ordinary winters it is of much advantage to its well being to shake some manure among the shoots. Similar treatment should be accorded to Belladonna Lilies, first stirring the surface of the ground around the latter previous to applying the manure. The brilliant spikes of Schizostylis coccinea stand as a reminder that in many gardens it is important to throw some protecting material among the plants. Myosotidium nobile I find can only be protected properly here by placing something clear of the foliage, which is so easily damaged. Double scrim is suitable.

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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.*

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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.*

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 38.5°.

ACTUAL TEMPERATURE:—

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, *Wednesday*, December 11, 10 a.m. Bar. 30·, temp. 52° Weather Dull.

Self-Sterility in Fruit Trees.

The practical importance of obtaining full knowledge of the self-sterility or self-fertility of different kinds of fruit trees is recognised by all fruit growers, and hence the results of the researches into this subject which have been carried on for some years past at the John Innes Horticultural Institution are to be welcomed, not only by the scientific student, but also by the grower. A summary of these researches begun by Mr. Backhouse and continued by other workers at the Institution, is now published* by Miss Ida Sutton, who since 1915 has been carrying on the work.

The researches which have been made on Plums, Cherries, and Apples show that in each of these fruits there are three categories of varieties, namely, those which are self-fertile, those which are self-sterile, and those which are partly self-fertile. The varieties which have been tested at the John Innes Institution are given below in the classified list.

PLUMS.

SELF-STERILE.	PARTLY SELF-FERTILE.	SELF-FERTILE.
Coe's Golden Drop	Rivers' Early Prolific	Denniston Superb
Coe's Violet	Early Favourite	Early Transparent
Crimson Drop	Coe's Emperor	Reine Claude Violette
Jefferson	Early Orleans	Golden Transparent
Bryanston Gage	Cardinal Dawson	Reine Claude de Bavay
McLaughlin's Gage		Oullin's Golden Gage
Early Green Gage		Reine Claude d'Althan
Old Green Gage		Monarch
Reine Claude d'Althan		Prince Engelbert
Pond's Seedling		Prune Gesunte
Wyedale		Gisborne
Frogmore Orleans		Victoria
Late Orleans		Czar
Prune d'Agen		Pershore
Primate (small numbers of flowers selfed, but no other cross on tree)		Yellow Magnum Bonum
Frogmore Damson		Early Mirabelle
		Myrobalan Red
		Belgian Purple

CHERRIES.

SELF-STERILE.	PARTLY SELF-FERTILE.	SELF-FERTILE.
Amber Heart	May Duke	Flemish Red
Black Eagle	Archduke	Late Duke
Black Heart		Morello
Black Tartarian		
Bigarreau de Schreken		
,, Noircie Gubert		
,, Napoleon		
,, Jaboulay		
,, Frogmore Early		
Early Rivers		
Elton		
Governor Wood		
Guigne d'Annonay		
Kentish Red		
Toussaint		
Waterloo		
White Heart		

APPLES.

SELF-STERILE.	PARTLY SELF-FERTILE.	SELF-FERTILE.
Beauty of Bath	Worcester Pearmain	Antonowka
Cox's Orange Pippin	Bramley's Seedling	Annie Elizabeth
Gascoyne's Scarlet	Lord Hindlip	Baldwin
Lane's Prince Albert	Lady Sudeley	Cellini Pippin
Norfolk Beauty	Old English Broadleaf	Coronation
Northern Greening	Doucin	Duchess of Oldenburg
Grime's Golden	Improved Doucin	Golden Spire
Yellow Newtown (very small number of flowers selfed)	Pyrus prunifolia	King of the Pippins
	P. baccata	Lord Derby
	Golden Russet	Red Winter Reinette
		Ribston Pippin
		Stirling Castle
		Sturmer Pippin
		Washington
		French Paradise
		Crimson Bramley

Although the author is properly cautious with respect to general conclusions, it appears fairly certain from the evidence which she adduces that, with one exception, self-sterile varieties show themselves fertile with the pollen of all other varieties. If this be so, it follows that there is no need for making experimental search for suitable pollenisers: any variety whose flowers bear plenty of pollen, provided it flowers simultaneously with the variety to be pollinated, will do for planting among self-sterile varieties. This to the fruit grower is welcome news.

The only exception is that of the Plums Coe's Golden Drop, Crimson Drop, Coe's Violet and Jefferson. These varieties are apparently incompatible: that is to say, they will not serve as pollenisers of one another. As the author points out, this case is specially interesting in view of the fact that Crimson Drop and Coe's Violet are known to be bud-sports of Golden Drop and Jefferson is suspected of similar origin. Hence they are all one except for the sporting character, and therefore there is nothing surprising in the fact that the self-sterility of the original shows itself in sterility between the original and its sports.

The existence of the three categories, self-sterile, self-fertile, and partly self-fertile, is not inconsistent with the hypothesis that self-sterility is a recessive character, although on that view it might be expected perhaps that self-sterile varieties should be self-sterile with one another. But our knowledge of the physiology of fertilisation does not justify our taking *a priori* views, and it is to be hoped that the study of subsequent generations of plants raised by crossing self-sterile and self-fertile varieties may settle this point ultimately.

It should be added that although in the case of Plums any polleniser will apparently serve to render fertile any self-sterile variety, in the case of Cherries the evidence is not so clear. In some Cherry crosses the number of fruits obtained is so small as to suggest incompatibility. For example, Bigarreau Frogmore Early set no fruit in 80 tests made by pollinating it with Late Duke, and none in 63 tests made with Bigarreau de Schrecken as the pollen parent. Indeed, an inspection of the most extremely valuable table recording the results of the numerous experiments seems to suggest that something very like incompatibility does exist in Cherries; that is, that certain varieties only are efficient as pollenisers. Yet it has to be remembered that pollination is often chancy work even when carried out with the utmost care—and hence on this important point we must await the results of further investigation.

* *Journal of Genetics* VII., 4, August, 1918.

Our Almanac. — We shall be obliged if secretaries of horticultural, botanical, and allied societies will send us immediate information of all shows and other fixtures for the coming year, for insertion in our Annual Almanac for 1919.

R.H.S. Fortnightly Meetings, 1919. — The following dates have been fixed by the Council of the Royal Horticultural Society for the fortnightly meetings during 1919, to be held in the Drill Hall of the London Scottish Regiment, Buckingham Gate, Westminster: January 14, 28; February 11, 25; March 11, 25; April 8, 29; May 13, 27; June 17; July 1, 15, 29; August 12, 26; September 9, 23; October 7, 21; November 4, 18; December 2.

Small Holdings for Germans. A statement published by Field Marshal VON HINDENBURG says that preparations are in hand for the purchase of 100,000 small holdings from the public funds to be transferred cheaply to farmers, gardeners, and artizans. For town workers, employees, officials, and the like, garden cities are to be built, where the houses will be rented at a moderate rate of interest on the cost of construction. The statement concludes with an appeal to the soldiers to save the German Fatherland by German discipline and German sense of order, and thus to prepare their own future happiness.

The Root Crops. The preliminary statement of the Board of Agriculture on the produce of the root crops shows that the yield of Potatos this year, 6·6 tons per acre, is equal to that of last year, and one-third of a ton above the average. The total production amounts to 4,209,000 tons, by far the largest ever raised, and 863,000 tons, or more than 25 per cent., above last year's record. Turnips and Swedes show a yield just over the average, 13·2 tons per acre, and more than half a-ton above last year; the total production, however, owing to the reduced acreage, amounts to 12,018,000 tons, and is a little below last year's total. Mangolds, with 20·6 tons per acre, are about 1 ton above the average, but 1½ tons below last year; the total production amounts to 8,231,000 tons, which, although a quarter of a million tons less than in 1917, is, apart from last year, the highest since 1912.

Plant Immigrants.—*Plant Immigrants*, No. 140, contains a brief description of the Benguet Lily, Lilium philippinense of Momba. This species of white trumpet Lily is said to be destined to become of great value both to commercial and private growers, and to be specially noteworthy for the shortness of time between potting and flowering. L. philippinense bears long, pure white, sweet-scented flowers on strong stems with graceful foliage. This species was first described by Mr. J. G. BAKER in *Gard. Chron.*, August 23, 1873, and was illustrated in the same issue (fig. 243).

A New Source of Alcohol.—In a recent communication to the French Association of Che-

nists of Sugar refinery and Distillery, Mr. H. COLIN, professor at the Catholic Institute, Paris mentions Anthriscus sylvestris as a possible source of alcohol in present conditions. The root of this plant, which is very abundant in parts, in fields and woods, contains a considerable quantity of crystallisable sugar and starch. Mr. COLIN obtained the following results from 100 grammes of fresh material: Reducible sugar, 0 gr. 96; saccharose, 5 gr. 64; starch, 14 gr. 50. The root also contains an active principle having a strong and disagreeable smell, but the author was able to assure himself that the principle is in no way poisonous, and that in any event it would not hinder the development of yeast when fermenting. The plant is biennial, and it would therefore be at the end of the first year of growth that the roots should be collected. At Verrières, Anthriscus sylvestris has formed the subject of an interesting experiment in selection, which, begun in 1874, is still progressing. This experiment was set on foot by HENRY DE VILMORIN, with the aim of replying to certain objections made to the efforts of his grandfather to ameliorate the wild Carrot.

An Agricultural University as Proposed Peace Memorial. A proposal to connect Vale Peace by establishing a Lincolnshire University emanates from the Rev. H. COLTON SMITH, vicar of Bourne. It is suggested that such a university should be established at Grantham or Spalding in the special interest of scientific agriculture.

Retirement of Mr. J. H. Goodacre. After a very long period as head gardener at Elvaston Castle, Derby, the veteran Mr. J. H. Goodacre is retiring from active service and a wide circle of friends will join heartily in the wish that he may enjoy many years of health and happiness. Mr. J. H. GOODACRE has had charge of one of the and famous gardens, and one of the few where topiary is still a great feature. As a skilful cultivator and exhibitor of both hardy and indoor fruits he has been to the front rank of successful competitors at London, Shrewsbury and other shows, for many years. He is to be succeeded by his son, Mr. B. GOODACRE, who now becomes gardener to the Earl of HARRINGTON, at Elvaston Castle, after twelve years' service as gardener to Sir E. CASSEL, at Moulton Paddocks, Newmarket.

"Punch" Almanac for 1919. The most features of Mr. Punch's Almanac for 1919 are topical, and both illustrations and text are calculated to produce that tonic effect so desirable at the close of an influenza epidemic. "If Parliament Were Called Up" is a delightful double page illustration, in which, among other things, Mr. PROTHERO is depicted hastily tuning up the camp allotment. The beauty of the Almanac is that its humour appeals to everyone in general, and to practically everyone in particular; for instance, the illustrated ode on Watering Roses and the one on Intensive Lessons on the Land will evoke hearty understanding laughter from horticulturists, now that the world has learned to laugh again. Mr. RAVEN HILL'S cartoon of the war-scarred 1913 handing on the torch of victory to the vigorous young 1919 is a fine conclusion to the Almanac.

War Horticultural Relief Fund. The Lord Mayor will preside at a meeting, to be held at the Mansion House on December 18, in support of the Royal Horticultural Society's War Horticultural Relief Fund. The principal speakers announced are Lord GRENFELL (President, R.H.S.), Col. Lord BURNHAM, The SPEAKER, Lady NORTHCOTE, Col. Sir CHAS. C. WAKEFIELD, and Sir HARRY J. VEITCH, hon. treasurer of the Fund. The meeting will commence at 3 p.m., and the Serbian Choir will be in attendance from 3 to 3.30 p.m.

New Garden Superintendent at the John Innes Horticultural Institute. We learn that Mr. A. HOSKINS has been appointed superintendent of the Garden at the John Innes Horticultural Institute, Merton, Surrey, in succession to the late Mr. E. J. ALLARD. Mr. HOSKINS is a Cumbrian, who commenced his gardening career in the gardens at Penalverne, Penzance, the residence of T. R. BOLITHO, Esq., where he was employed for five years. Fifteen months of training at Kew followed, and from Kew he went to the Cambridge University Botanic Gardens, where he remained senior foreman for eleven years. From Cambridge Mr. HOSKINS obtained the position of lecturer and head of the horticultural department under the Lancashire County Council, and was at the same time Hon. Lecturer on Plant Pathology at Liverpool University. After three years' work in the Lancashire district he was appointed lecturer and superintendent of the Horticultural Department at the West of Scotland Agricultural College, here with a district covering no fewer than ten counties. Mr. HOSKINS conducted classes for teachers in school gardening, and many keen Lads formed a demonstration fruit plot and demonstration school garden plots at Kilmarnock, had charge of the gardens at Auchincruive House, and supervised the establishment of a Fruit Demonstration Farm at Lugar, besides lecturing and advising throughout a district covering the active

MR. A. HOSKINS, THE NEW SUPERINTENDENT OF THE JOHN INNES HORTICULTURAL INSTITUTE.

Garden of the College. As an author Mr. HOSKINS is best known by his book, *Soil: A Gardeners, with an Appendix on Fertilizers*. He has also written Extension Leaflets, and Bulletins on Soil, Gardening, etc., issued by the West of Scotland Agricultural College. The late Mr. ALLARD Mr. HOSKINS has taken the keenest interest in his work, and won the high esteem of all his associates as a practical demonstrator and capable lecturer. His wide experience in many ways as a specialist and thorough cultivator fits him for his post at Merton, and Kewites will be delighted to know that the important post of Superintendent at the John Innes Horticultural Institute is to be held for a second time by a former member of the Kew Garden staff.

A New Botanical Journal. The first number of the new American journal, *Botanical Abstracts*, has just reached this country. Published in September, 1918, it appears rather later than had been at first expected. On the front page the Editorial Board is given as follows: Editorial Board: BURTON E. LIVINGSTON, Editor in Chief, The Johns Hopkins University, Baltimore, Maryland; J. H. BARNHART, New York Botanical Garden, New York City, Editor for Bibliography, Biography, and History; E. W. BERRY, The Johns Hopkins University, Baltimore, Md., Editor for Paleobotany and Evolutionary History; C. J. CHAMBERLAIN, The University of Chicago, Chicago, Ill., Editor of Cytology; W. H. CHANDLER, Cornell University, Ithaca, N.Y., Editor for Horticulture; H. J. CONN, New York Agricultural Experiment Station, Geneva, N.Y., Editor for Bacteriology; H. C. COWLES, The University of Chicago, Chicago, Ill., Editor for Ecology and Plant Geography; B. M. DUGGAR, Missouri Botanical Garden, St. Louis, Mo., Editor for Physiology; C. STUART GAGER, Brooklyn Botanic Garden, Brooklyn, N.Y., Editor for Botanical Education; G. M. GREENMAN, Missouri Botanical Garden, St. Louis, Mo., Editor for Taxonomy of Seed-Plants and Vascular Cryptograms; HENRY KRAEMER, University of Michigan, Ann Arbor, Mich., Editor for Pharmacognosy; DONALD REDDICK, Cornell University, Ithaca, N.Y., Editor for Pathology; J. R. SCHRAMM, Cornell University, Ithaca, N.Y., Editor for Taxonomy of Non-Vascular Cryptograms; G. H. SHULL, Princeton University, Princeton, N.J., Editor for Genetics; E. W. SINNOTT, Connecticut Agricultural College, Storrs, Conn., Editor for Morphology, Anatomy, and Histology; RAPHAEL ZON, U.S. Forest Service, Washington, D.C., Editor for Forestry. The Editors for Agronomy, Soil Technology, and Plant Production will be announced later, as also will the sectional editors for other countries than the United States. The journal is published as an Allied protest against the German published *Botanisches Centralblatt*. The work is intended to be international, and to give rapid publication of abstracts of all papers bearing on botanical science published in all parts of the world. Editors for each subject are being arranged in Allied countries. The first number consists of 36 pages, 7 inches by 10½ inches. It would make it much easier for readers to find the subjects in which they were particularly interested if, on the cover, the page number on which abstracts under that heading appeared were given. A change which would be much more difficult to make, and which perhaps would have to be deferred until the first volume is complete, is the change in the width of the printing column in the page. As it is, the printing column is 5 inches wide, while the average international card index card is about one-eighth inch less, and in any case a margin is necessary, so that a printing column of 4½ inches would be more useful for those who wish to cut up and paste each reference on a card index. In other respects, the editors can be warmly congratulated on a well printed, clearly spaced, serviceable journal, which should be in the hands of all botanists.

The Anatomy of the Potato Plant. This excellent and beautifully illustrated description of the anatomy of the Potato plant[*] should be studied by all engaged in scientific investigation of the Potato, and in particular by plant pathologists. From the practical point of view it contains much that is of interest. The observations on the distribution and frequent anastomoses of the phloem elements (sieve tubes), including the development of secondary phloem at the time of flowering are evidently correlated with the need for large tracts of crude sap-conducting tissues in order to admit of the amassing of starch by the tuber. The author also shows that the view often put forward that the bulk of the tuber is formed by the pith is inaccurate, and that it is the cellular tissue external to the pith which contributes most to the body of the tuber.

The Storage of Sulphate of Ammonia.—In the Food Production Leaflet No. 53, issued by the Board of Agriculture, it is pointed out that whether sulphate of ammonia is stored in bags or loose in a heap, the building in which it is kept should be dry and an efficient protection from rain. Sacks of sulphate of ammonia

* Philippe de Vilmorin, Report of the International Botanical Congress, 1910.

* "Anatomy of the Potato Plant, with Special Reference to the Ontogeny of the Vascular System," by E. F. Artschwager, *Journ. of Agric. Research*, Washington, XIV., No. 6.

should be piled on a platform raised 6 inches from the floor, a 3 inch layer of some dry substance being placed beneath the platform to absorb any moisture draining from the sacks. The dry substance may be either Castor-meal, Rape-meal, bone-flour, or raw-bone meal (which can be afterwards used as fertilisers), but chalk, lime, or basic slag must not be used, as they would liberate ammonia from the sulphate. When the sulphate of ammonia is to be stored in a heap, the floor should first be covered to a depth of 6 inches with one of the absorbent substances mentioned above (failing these, a layer of dry soil, sand, or sawdust may be used.) Before being applied to the land the sulphate should be freed from lumps, and may with advantage be passed through a ¼ inch riddle. This will not be necessary in the case of "neutral" sulphate (i.e. containing less than 0.025 per cent. of free acid), which contains no lumps and does not cake. Farmers are recommended to secure the neutral sulphate wherever possible, as this does not rot the bags, and can, moreover, be applied to the land through a drill.

War Items.—We learn with regret that Corpl. EDWARD HERBERT FISHENDEN, 7th Batt. Royal West Kents, has died of wounds received in action on November 5, in France. He was the only remaining and youngest son of Mr. and Mrs. E. H. FISHENDEN, of The Gardens, Great Culverden, Tunbridge Wells. He was only 19½ years of age, and joined the Colours in October, 1914. He had two years' service in France, had been wounded three times, and gassed once. In August, 1917, he was made King's Corporal on the field for gallantry. He passed peacefully away on November 7, and is laid to rest in the British Military Cemetery at Premont. Mr. and Mrs. FISHENDEN lost their eldest son, Signalman H. A. FISHENDEN, aged 31 years, in January of this year. He went down with his ship, H.M.S. "Racoon." Their daughter is serving with Q.M.A.A.C. Corpl. FISHENDEN started work in the gardens at Woodbridge Abbey, Suffolk, where his father was gardener. He went to Tunbridge Wells about five years ago, where he was employed with his father at The Huntleys. Signalman HARRY A. FISHENDEN commenced his gardening career under his father at Stutton Hall, near Ipswich. He was later employed at the Chantry Gardens, Ipswich; at Shorcham Place, Kent; East Sutton Park; Park Hatch, Surrey; and Belton Gardens, Isle of Man. His last position was as gardener to Mrs. BLACK, Cranham Holme, Upminster. He joined the Navy on the outbreak of war.

—— M. MAURICE MADELIN, for some time employed by Messrs. W. WELLS AND CO., of Merstham, has been employed as interpreter with an American infantry regiment. His many friends in this country will be interested to know that he has been awarded the Croix de Guerre.

—— M. PINGUET-GUINDON, of Tours, has had the great misfortune to lose both his sons in the war. The younger, LOUIS, was killed before his brother ROGER, a sergeant major in the Engineers, who died from wounds received at Villotte only a short time before the armistice was signed.

—— We regret to learn that Lieut. ROBERT CROUX, son of the well-known fruit-tree grower, M. CROUX, of Chatenay (Seine), was mortally wounded in action quite recently.

Publications Received.—***Work of the Truckee-Carson Reclamation Project Experiment Farm in 1917.*** (Published by U.S. Department of Agriculture, Bureau of Plant Industry, Washington.)—***Kew Bulletin,*** No. 7, 1918, and Appendix II. (Published by H.M. Stationery Office.)—***Apple Powdery Mildew and its Control in the Arid Regions of the Pacific North-west.*** By W. A. Taylor. (Published by U.S. Department of Agriculture as Bulletin No. 712.)

THE MARKET FRUIT GARDEN.

NOVEMBER is commonly considered to be the best month for planting fruit trees, but it is seldom that it offers such favourable opportunities for the work as it did this year. It is true that the rainfall at my place was about normal, 2.40 inches falling on thirteen days, but there was a period of twelve days without rain from the 12th to the 23rd inclusive—indeed, there was little to interrupt the work from the former date to the end of the month. Twelve white frosts were recorded, the thermometer on the grass registering 7° on two occasions, but the frost was never of sufficient duration to harden the ground and make the soil unworkable. Thus the trees have gone in very well indeed. Good progress has also been made with the digging of the older plantations, work which must still be done by women, owing to the scarcity of male labour. The women have now learned to dig fairly well, though they are slow, owing to the work being really beyond their strength. The fixed wage for women is now 5d. per hour, and at this rate the operation is very expensive. I cannot, however, see any satisfactory way of escaping it where the trees and bushes have grown to such an extent as to prevent horse cultivation. Where this is not the case I am going to try the new Fruit Farm plough invented by Messrs. Seabrook and Udall, a description of which was given in *Gard. Chron.*, Sept. 7, 1918, page 103. The implement has arrived, but has not yet been tested. Should its work fulfil expectations it will effect considerable economy in the cultivation of market plantations.

YOUNG FRUIT TREES.

There appear to be only two ways of obtaining exactly the kind of young fruit trees suitable for planting. The best is, no doubt, to see them growing in the nursery. The other is to buy maidens and train them yourself. Even then the buyer is quite in the nurseryman's hands with regard to the stock on which they are worked. As mentioned in a previous article, I required bushes on the Paradise with 18-inch stems. It was necessary to go to five nurserymen to get these in the varieties selected, and then few of them could guarantee quite this length of stem. No doubt they have done their best, but few of the trees have stems much over 12 inches to 15 inches long. However, most of them have something of a stem, so that it is possible to put a narrow band of wire netting round them to prevent gnawing by rabbits. The question is, how wide a band is necessary to ensure safety? We have previously used 2 feet bands for half-standards. I think 1½ foot is sufficient, but am doubtful whether less will prove an absolute protection. Of course, the rabbits could stand up and gnaw the lower branches, but it is hoped that a fairly wide circle of netting, standing well away from the stem, will alarm them even if it does not render their mischief a physical impossibility. The first spell of severe weather will probably settle the point. At any rate, the stems will be safe, and that is the vital point.

BROWN ROT ON PLUM TREES.

It would be difficult to imagine anything more tedious in the way of pruning than the treatment of large Plum trees that have been severely attacked by brown rot. This disease was very prevalent at blooming time last spring, particularly on the variety Czar. Most of the brown leaves were then pulled off, but there are hundreds of dead spurs showing plainly now that the leaves have fallen. There is no doubt that these should be removed, because they contain the winter resting stage of the fungus, which is capable of developing next spring, and, in favourable conditions, distributing spores to germinate on healthy leaves. It is a safe rule that dead and diseased wood of all descriptions should be removed in the winter pruning of all fruit trees. Unless this is done it is doubtful whether spraying can be completely successful. At any rate, one process helps the other. Large pieces of wood should be collected and burnt, but it is impossible to gather up small bits, such as spurs, in a large plantation. The next best treatment is to dig them into the ground. Even if they have to be left on the surface, they are less liable to do harm there than on the trees.

WINTER MOTH.

The wingless females of the Winter Moth began to ascend the trees in large numbers about the middle of November, as shown by those trapped on the grease-bands. The catch of males is even more numerous, many of the bands being thickly sprinkled with them. This is, perhaps, rather a drawback than otherwise, as there is little to be gained by destroying males, whilst their bodies reduce the sticky area of the bands and may enable females to pass over in some cases. The fact of there being so many moths shows that plenty of caterpillars survived spraying with arsenate of lead in the spring, and were able to complete their life-cycle.

SPRAYING MACHINES.

For several years spraying has been done here with a "battery" of pneumatic knapsack sprayers, charged with both air and liquid from one powerful pump. The system has worked well enough, but the apparatus was practically worn out at the close of last spraying season. In selecting a new machine I aimed at something that would get over the ground more rapidly and deliver the spray with more pressure behind it. The latter is an important point when the trees grow tall, and it is also very desirable when dealing with aphides. After careful consideration it has been decided that nothing less than a power sprayer, driven by a petrol-paraffin engine, would prove really satisfactory in orchards arranged as they are here.

In selecting spraying apparatus there are several points to be taken into account. In orchards with plenty of space between the trees, and no bushes or other crops beneath them, one of the numerous manual sprayers, with tank and pump on wheels, moved in much the same way as a wheelbarrow, does good work. On hilly or soft ground, however, it is almost impossible to shift such an outfit. A horse-drawn machine with manual pump overcomes this difficulty, but has the disadvantage of keeping a horse standing where it might be doing more useful work elsewhere. For orchards where it is impossible to draw a machine between the rows the choice is between knapsack sprayers and outfits which have the pump and tank on the headland and deliver the fluid through long hoses. Knapsack sprayers answer very well indeed if the trees are reasonably small, and there is nothing more convenient for getting about amongst crowded growth, but they are too slow on a large place, and have insufficient power for tall trees. Of machines to work from the headland there are two classes, manual and power. Some of the former are pumped by one man, others by two, but my experience is that all powerful pumps need two men to obtain sufficient force behind the spray. Catalogues too often state that such outfits "will easily supply up to 8 nozzles at a distance of 200 to 300 yards," but the makers hesitate to corroborate such statements if approached personally. There is no doubt that these machines entail very hard work and use a lot of labour. There remain, then, the power sprayers, several excellent types of which are on the market. The outfit I have selected delivers the fluid through a portable steel main, made in 15-feet lengths, with three-way cocks at intervals, to which rubber hoses can be attached, leading to the lances and nozzles. The main is laid down between the rows, and a large area can be

sprayed on each side of the main if 60 feet rubber hoses are used. A horse is necessary to draw the machine from one field to another, but it would not be difficult to move it along the headland by hand. With such an outfit it will be possible to get over the ground rapidly, a point of vital importance in dealing with serious attacks by insect pests, such as the caterpillar infestations of recent years. I imagine that it may take about half an hour to shift the main, but, once that is done, spraying will go on continuously.—*Market Grower.*

CULTURAL MEMORANDA.

PRUNING NEWLY-PLANTED APPLE TREES.

I was very interested in the note on p. 220 by *E. M.* on the subject of pruning newly planted Apple trees, and cordially agree with him that it is a very bad practice to leave young fruit trees unpruned the season they are planted.

In my opinion, this, and one other common mistake, is answerable for the many miserable and stunted orchard trees one sees in all parts of the country, and unless remedial measures are taken in good time such trees will never make healthy and productive specimens.

The majority of amateurs are afraid to prune for fear of doing harm, and I believe that advice is often given them not to prune newly-planted fruit trees. If young trees are normal, healthy specimens, they should always be moderately pruned the same season, perhaps rather later than one usually prunes. I usually do it just before growth commences in the spring. Many people are more concerned about the few fruits they obtain the first season than about building up a strong tree for the future, and yet in the case of other fruits, such as the vine, they would condemn the practice.

The second common error is that of allowing the grass to grow close up to the stems of young fruit trees. I believe that two operations in orchard Apple culture, viz., pruning the first season and keeping the ground clean, are the principal steps towards success.

When visiting the R.H.S. Gardens at Wisley last year, I saw in the experimental quarter a striking confirmation of the evil results of letting the grass grow close to the stems of fruit trees. Various experiments had been made, but so pronounced were the disastrous results of leaving the grass to grow around the stems that no one seeing them could but be convinced of the evil's of the practice.

When asked to advise on the subject of planting fruit trees in grass, I always suggest stations 6 feet in diameter, the stations to be kept quite clear of grass and weeds, and increased in size as the trees grow. In cases where trees have become stunted, by over cropping in a young state, non-pruning when newly planted, allowing the grass to grow over their roots, or by a combination of these evils, I would suggest hard pruning as the only treatment likely to be permanently successful, allowing the trees to carry very little fruit for a year, clearing the soil for several feet around the base of the tree, and giving mannrial assistance.

I have had a striking illustration of what this treatment can produce. Many years ago, after planting some standard orchard trees, one or two trees of Lane's Prince Albert became stunted and persistently refused to grow, and bore a quantity of small fruits. I cut the stunted growth off almost close to the head of the standard, with the result that a new head of clean growths was made the first season afterwards, thus laying the foundation of a healthy and vigorous tree.—*J. G. Weston, Eastwell Park Gardens.*

FRUIT REGISTER.

PEAR PASSE CRASSANE.

RAISED by M. Boisbunel, of Rouen, and first fruited in 1855, the Pear named Passe Crassane syn. Passe Crasanne) has come to be regarded as one of the best of varieties for use at Christmas time, notwithstanding the late Mr. Blackmore's contention that it was worthless at Teddington. It is fortunate for those who have a fair crop of this excellent Pear this season that the fruits do not all ripen at the same time; indeed, many specimens will be in first-rate condition in February and March, if kept in a proper fruit room, even though the majority may be served for dessert during the Christmas and New Year season. The medium sized, roundish obovate fruits are dark, russety brown, with slight yellow shading. The flesh is melting, rich and aromatic. Mr. Geo. Woodward regards Passe Crassane as a Christmas Doyenne du Comice, and considers high cultivation necessary to bring the fruits to perfection. Some years ago, at Barham Court, he grew specimens weighing upwards of 14 ounces.—*B.*

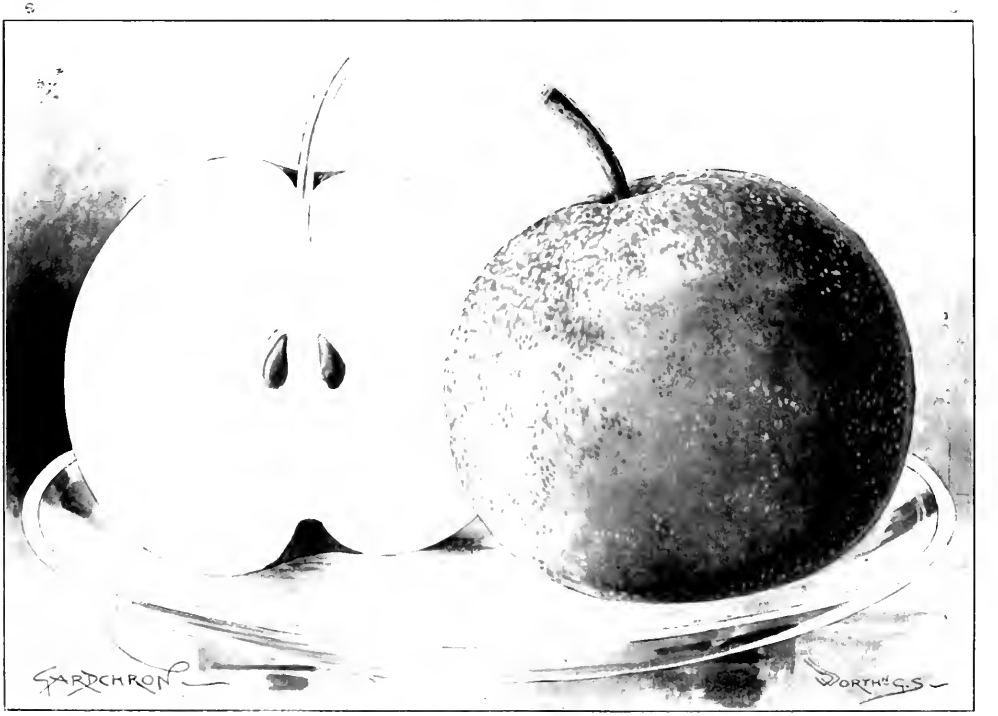

FIG. 95.—PEAR PASSE CRASSANE: A FIRST-CLASS DESSERT VARIETY, IN SEASON AT CHRISTMAS.

LETTERS FROM SOLDIER-GARDENERS.

BULGARIA.

POSSIBLY a few brief notes from an erstwhile gardener now on service in Bulgaria may be of interest to those readers who have not had the fortune, or, as we are often inclined to think it, the misfortune, to visit the Balkan States; on one or two previous occasions I have sent notes from Macedonia, but they would be incomplete without one from the country we have so recently conquered and travelled through.

South of the Belashitza Mountains, which divide Bulgaria from Greece, or Macedonia

to spot the county, while topographically somewhat similar, is in reality entirely different from that on the northern side; the climate of Greece is much drier, and the soil itself of a sandier and more calcareous nature, much more arid and barren, while in Bulgaria and Serbia the atmosphere seems much more damp and humid, and the soil is vastly more fertile, being much stronger and dark in colour, in many places almost resembling old potting soil, or a mixture of loam and leaf mould.

Naturally, field and garden crops flourish here with little or no artificial assistance, and if only the natives would appreciate the vast possibilities of their country from an agricultural and horticultural point of view, there would certainly be far less poverty among them.

At present, however, every peasant appears to be a small holder on a limited scale, and on his small patch of land he and his family are almost wholly dependent for their food supply. The staple food crop is Maize, which grows to perfection; the Corn cobs are harvested by hand picking by the women and children. After being dried and stripped of their outer covering, the Corn is ground by the old-fashioned stone-milling process, and the flour, or meal, used for all baking purposes, while the offal is the only form of grain food used for oxen, which do all transport work both on the land and by road. The Maize straw is used for a variety of purposes, but principally as winter fodder for cattle.

Vegetables are grown in small quantities, but always of excellent quality; the most important is a large and somewhat coarse variety of Vegetable Marrow, which is sown in the open fields between the rows of Maize. The Marrows are never cut green, but are left on the plants to ripen until the maize is harvested, when they are collected and stored for winter use.

I might add, in passing, that these ripe Marrows, far from being tough, are most excellent when cooked, the writer having, in less peaceful days, on more than one occasion assisted in rescuing these vegetables from our late enemy's abandoned stores, and a most welcome addition they made to our Army rations.

Cabbage, of a variety not unlike a small Ox Cabbage, is grown in small quantities, as also are Leeks, but these latter are almost invariably used before they come to maturity.

Aubergines are a favourite crop, but their fruit is seldom cooked to the best advantage, and a large variety of Capsicum is also widely grown, every cottage and hut having strings of the brightly-coloured pods hung out to dry during the autumn.

The most favoured garden crop, however, is the Tomato; the seeds are sown in the open ground, and without the least attention the plants produce amazing crops of fruit. The plants are allowed to branch and straggle along the ground in tangled profusion, but they always appear to bear a wonderful quantity of fruit of remarkable quality.

For flowers or decorative plants the Slav races appear to have no use or liking at all, but my notes would be incomplete without mention of Tobacco, which, next to Maize, is by far the most important and, I should judge, the most lucrative product of the land. I have been unable, so far, to name the variety, but the plants, which reach a height of upwards of 6 feet, bear broad leaves of very fine texture, surmounted by a small, deep pink inflorescence. Of the finished product I am afraid that I personally cannot speak in terms of very great admiration, as the scent and flavour leave much to be desired, but I believe it is regarded by the natives and some connoisseurs as being of excellent quality; certainly it is far preferable to the tobacco smoked by the German troops, which is not unlike chips of Oak bark.

Cotton is grown here in some districts, but I have never seen anything in the nature of a Cotton mill or factory, so am unable to say what use is made of it.

Huge tracts of fertile land between the many mountain ranges and spurs are at present uncultivated, though this may, of course, be due to the war time conditions which have so long prevailed, but the fact remains that from a food producing standpoint this country should rank second to none in the Balkan States. *J. E. Palmer (78th Field Ambulance), late of Felstone Gardens, Tarporley, Cheshire.*

THE ONION FLY.

THE Onion fly is rather smaller than the ordinary house fly, which it very much resembles. It hatches about the first week in May from a chrysalis which has remained in the ground all the winter, and commences laying its eggs on the Onion plants about a week later. The eggs require a little moisture to assist hatching, consequently when deposited during dry weather they remain dormant until the first wet day, when they quickly hatch and the grubs begin to eat their way into the tiny bulb. The fly cannot survive frost, and if frost or very cold weather occurs just after the grubs are hatched many are destroyed before they have time to do any damage. This is the reason why the pest is not so troublesome in some seasons as in others. The fly is guided to the Onion by its sense of smell, and an unhealthy plant or one that has been attacked by wire-worm or other ground insect always seems to be the first attacked. It is by obliterating the smell of the Onion that such things as soot or paraffin are use-

FIG. 96.—THE ONION FLY: ANTHOMYIA CEPARUM. (Maggot and Pupa, magnified.)

ful. After the grubs are fully grown, which takes two or three weeks, they leave the Onion and bury themselves in the ground at a depth varying according to the condition of the soil, but seldom more than 6 inches. Before the grubs leave the Onion they may be killed by paraffin emulsion at a strength of one in ten; this specific will not harm the Onions, but will kill the grub if it reaches them in less than an hour. In preparing soil for an Onion bed it is a good plan to trench it two spits deep and very carefully bury the top spit, in which most of the chrysalids harbour, for as the fly emerges directly from the chrysalis it cannot emerge through, say, 12 inches of soil, and so it perishes. Directly the first flies make their appearance efforts should be made to poison them. Their ordinary food is pollen and decaying vegetable refuse, but they are very fond of anything sweet, and can be easily poisoned by placing ordinary fly papers soaked in sweetened water in saucers between the rows of Onions during fine weather. They can also be caught on ordinary sticky fly papers stretched between the rows. By poisoning or catching the first few flies, more can be done to prevent the ravages of the grubs than all the deterrents put together. Without doubt the best way for anyone who cannot succeed is to refrain from growing Onions for one year, as the pest would then die out, and although flies do migrate to some extent, there would be insufficient to destroy a crop grown, say, one hundred yards from where they were grown the previous year. These methods can also be applied to the Carrot fly and the Cabbage root maggot fly with equal success. *W. Robinson, Sunny Bank, Eaton, Gaisland, Lancashire.*

HOME CORRESPONDENCE.

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

Chamber of Horticulture.—It is to be hoped that growers joining the Chamber will, in their own interests, make it the early business of a committee to inquire into, and press for legislation relating to, a minimum standard quality for commercial chemical sprays bearing well-known names such as lime sulphur, arsenate of lead, potassium sulphide (liver of sulphur), and others. We advocated such legislation in the Press some years ago, and are now more strongly than ever convinced of its necessity if growers are to be safeguarded. The question of commercial copper sprays for fungous diseases is on another plane, as the percentage of copper gives no real clue to their effectiveness, for reasons well known to scientists and proved by the practical experience of growers. It is also evident that materials such as are offered by reputable firms made to their own research formulae (and not coming under general classification and nomenclature such as the examples given) could not fairly be controlled. *Walter Voss and Co., Ltd.*

Bud Variation in Potatos.—I am glad that Mr. Taylor, on p. 229, calls attention to a statement in my Ormskirk paper, which I admit gives ground for criticism, and requires explanation. It would have been more accurate to state that "in nearly every instance" where a new variety is said to have arisen by bud variation, the whole of the tubers at the base of the plant, when lifted, differ entirely from others in the plot. The present discussion, I think, began by one of your correspondents advising Potato growers not to remove so-call'ed "rogues" from their Potato crops, as they might prove to be new and distinct varieties of superior merit, and it is beyond all question that the plants so referred to would, when lifted, be found to be bearing tubers which were all like one another, and different from the rest of the tubers in the crop. That there are cases where one or more tubers at the base of a plant differ in certain respects from the others, is a fact with which we are all familiar, but no one has ever suggested that the presence of such tubers would so alter the character of the plant as to give it the appearance of a "rogue" in the growing crop, the presence of such tuber or tubers being only noticeable when the crop was lifted. It would have helped us all if Mr. Taylor had explained precisely what he meant by the term "mutants," for the first essential, in considering a subject like the present, is to be exact in regard to the terms used. Presumably Mr. Taylor implies by the term "mutant" a new and distinct variety, and not merely a colour variation. But although Mr. Taylor reports that he has obtained two instances this year where certain tubers differ from others borne upon the same plant, neither he nor anyone else has given a single instance of any one of the distinct varieties of Potatos now in commerce having arisen in this way. There is no reason to suppose that in the two "mutants" Mr. Taylor has obtained this year, we shall find that nature has adopted an abnormal method of originating new and distinct varieties, and we may anticipate that these "mutants" will, under cultivation, if they differ in any way from the type, do so only in regard to the colour of the skin. In your issue of November 23, Mr. Jackson made some further quotations from Darwin in support of the claim that new and distinct varieties of Potatos have arisen by bud-variation as well as from grafts. It is obvious, however, from a study of the context, that Darwin was quoting the reports of experiments made by others rather than by himself. There is nothing to show that Darwin had any opportunity of testing the accuracy of the statements made to him, or saw the "sports" to which they referred. I see no reason, therefore, why we should take the views expressed by Darwin as final or authoritative, more especially if these are at variance with the experience of practical and scientific Potato growers of to-day, who are at least as careful and experienced as those upon whom Darwin was obliged to rely. If new and distinct varieties arose in the manner stated, we should expect the same results to-day, but, as mentioned above, no one is able to point to any one of the Potatos now in cultivation as having originated either by bud

variation, or from grafts. The reports given of the varied forms obtained by grafting Potatos are at first sight remarkable, but as the grafts were taken from many very different varieties, one would naturally expect the same diversity in the plants and tubers which they produced. Mr. Jackson mentions that he still has a number of tubers of one of his "sports" ready to sprout for next year's planting, and if he can send some to Ormskirk next year it would be interesting to see how far they can be identified with existing varieties. I fully appreciate the friendly tone of Mr. Jackson's letter, and agree with him that so-called "sports" should be submitted to the most rigorous tests. *Arthur W. Sutton.*

Government Housing Scheme. My committee feels that it is advisable when considering the housing scheme, sufficient ground should be allotted to each house to enable the occupier not only to grow sufficient vegetables for his family's consumption, but fruit also. This would mean four to six houses per acre. Land adjoining the house is much preferable to separate allotment ground, as ensuring economy of the worker's time. To ensure consideration being given to the above, it suggests that a representative of horticultural sub-committees be appointed on any county or local committee formed under the housing scheme. *T. H. Sayers, Organising Secretary, Horticultural Sub Committee for East Kent, Kent War Agricultural Committee.*

The Pagoda at Kew. The illustration in fig. 90 of the Pagoda at Kew reminds me of a story I heard from Sir J. D. Hooker. When first built it was provided with brass bells hanging from the projecting roofs. They suddenly disappeared. It was discovered that George IV. sold them to pay his debts! *Geo. Hyslop, Dunchurst, Bankcome Wood Road, Bournemouth.*

Silver Leaf Disease.—I believe it would help those who are endeavouring to combat Silver Leaf disease if owners of affected Peach and Plum orchards would state the age of their trees, and the nature of the subsoil. In all cases of Silver Leaf that have come under my observation, diseased trees, whether Peaches or Plums, have been aged ones with strong, deep roots growing in stiff, clay soil. This seems to suggest that the fungus causing Silver Leaf (Stereum purpureum) follows as the result of the roots of the trees entering an unsuitable clay subsoil. If this theory be correct, we can in future prevent the spread of Silver Leaf by root pruning and lifting the fruit trees. *John Bates, Mentmil Gardens, Stow.*

Mr. E. Molyneux's thoughtful queries on p. 240 concerning Silver Leaf disease are certainly deserving of the fullest attention from all interested in fruit growing. As Mr. Molyneux suggests, the cutting out of affected branches or the destruction of affected trees is no real remedy. That the Food Production Department of the Board of Agriculture cannot at present fully enlighten us upon this insidious disease is doubtless due to the fact that much research work remains to be done before a remedy or a deterrent to the disease is found which will enable Silver Leaf to be thoroughly stamped out in the orchards and gardens of Great Britain. Without claiming to any scientific knowledge upon the matter, and lacking the opportunity of laboratory tests and inner research work, I am of the opinion that the disease is essentially a soil organism, and any attacks made upon a tree must first come from "under" or "at" ground level. If ultimately this view should prove incorrect, then I should fall back upon the belief that bad conditions of soil and drainage, or direct injury to the trees, are the main causes of the complaint. The reason I suggested that grafted trees seemed more subject to disease than trees upon their own roots was due to my own observations, and to the fact that an imperfect graft union would provide an easy means for spores of the disease to enter the tree. Further, having observed many Plums, Cherries, etc., upon their own roots in farm and cottage gardens, I have not known of a single instance of Silver Leaf occurring among such trees. Though I recognise the truth of Mr. Molyneux's assertion that the majority of modern fruit trees are necessarily "grafted" trees, the fact remains that many old world trees were perpetuated by suckers, or originated as seedlings among cottage folk. Amongst Plums the variety Victoria seems the most susceptible to the complaint, and for this reason for the past few seasons I have omitted this Plum from my list of desirable varieties for new fruit plantations. I do not know what Mr. Molyneux's experiences are, but it seems to me that the majority of trees which suffer from Silver Leaf do not show the disease until the roots have grown well down into the subsoil. This seems to be an especially noticeable feature with trees in heavy soil. The reason for the upper branches often dying first seems to be due solely to the fact that the upward flow of sap slackens as the disease gains headway. Very noteworthy, too, is the rapid decay of the heartwood, which also points to the view that the attack is not an external one, upon the foliage. Were the attack in this simple form it could doubtless be kept in check by spraying. I would advise that all heavy soil should be broken up thoroughly before planting fruit trees, the incorporation of lime rubble (or mortar rubble) and charcoal in good quantities, the selection of varieties that appear to be immune, and very special care after planting in the use of the spade in fruit plantations. Any facts that can be brought to light regarding soils which are (or are not) subject to the spread of the disease, varieties that are subject, and varieties that are immune, and any suggestions as to a remedy, or, better still, a preventive, would prove invaluable. I would further suggest that planters of Plums and Cherries should examine the trees and record any that carry serious abrasions low down on the bark or any with imperfectly healed graft unions. *P. S. Hayward.*

The Fruiting of Cupressus funebris see p. 232).—We have often found cones on Cupressus funebris, but never on trees under 10 to 15 years old, and the coning specimens are always pot bound. All our present stock has been raised from home-saved seeds, although I consider cuttings the quickest method of raising plants. *G. H. S., Abbeyon Hall Gardens, Loughy Mill, Derbyshire.*

Peat versus Leaf-mould. In the course of his interesting "Notes from Kew," Mr. Watson remarks (p. 223) that leaf mould should be sterilised to avoid the risk of bringing eel worms into the garden. I have long been convinced of the superiority of peat as plant food and fertiliser, inasmuch as, before it is applied to the soil, it neither harbours eel worms, slugs, snails, or other animal pests, nor permits fungous growth of any kind. Its antiseptic properties, however, do not render it indigestible by plants, for one may see how readily seedlings send their rootlets into particles of peat and thrive on it. Peat, of course, is not found in every district; but, where it does exist, is it always naturally in a fit state for use. The wet, acid stuff out of a peat moss could not be applied to land immediately without detriment to the crop, but exposure to sun and frost soon disintegrates it and deprives it of acidity. Where peat is cut for fuel, there is always plenty of dry, pulverised material lying about, which, when riddled, makes a beautiful compost. Best of all is the accumulated dust "peat stour," as we call it, beneath an established peat stack. *Herbert Maxwell, Monreith.*

SOCIETIES.

DUMFRIES AND DISTRICT HORTICULTURAL.

NOVEMBER 30.—The annual meeting of the Dumfries and District Horticultural Society was held in the Wesley Hall, Dumfries, on the 30th ult. In the absence of the president, through illness, Mr. A. W. M'Alister, vice-president, presided. The following office bearers were appointed: President, Provost S. Arnott, Sunnymead, Maxwelltown; vice-presidents, Mr. A. W. M'Alister, Mr. J. L. Armstrong, Mr. J. Croall, Mr. J. Maxwell Gray and Mr. W. Hutchinson; secretary and treasurer, Mr. T. Douglas, Greenbrae, Dumfries; members of committee, Mr. Brown, Portrack, and Mr. M'Leod, Dalawoodie (gardeners), Mr. Carson and Mr. Thos. Hunter (traders), and Mr. R. M'Gill and Mr. O. Robertson (amateurs).

CROPS AND STOCK ON THE HOME FARM.

CHALKING LAND.

FROM the presence of so many large pits and quarries in chalk districts we must assume our forefathers employed chalk largely in their agricultural operations. Chalk is practically pure calcium carbonate, and its application to land during the winter, at the rate of 20 tons per acre, provides useful work for horses and men at a time when the land is frostbound. The chalk should be spread evenly over the surface where it may be pulverised by frost, rain and wind, and thus gradually mix with the soil, setting free some of the humus therein, but not to the extent that lime does. Chalk ameliorates the physical character of the soil, rendering stiff soil more easy to manipulate, and is especially useful in fields where Turnips and Swedes are badly affected with Finger and Toe disease.

EMPTYING THE MANURE YARDS.

The present is a good time to clean out the manure yards ready for the reception of cattle for the winter. Where manure is not required for the Wheat crop it should be carted on to land intended for Mangold, Cabbage, and Potatos next season, tipped out in heaps, and spread evenly over the ground subsequently. Manure applied to the land at this season for the crops noted provides food by the time the crops are in a position to assimilate it.

Some of the yards may require repairing at the base; holes should be filled with chalk or stones to render them as dry as possible, and allow a slope to carry away water from heavy rains, thus adding to the comfort and welfare of the cattle. Every yard should have a shed attached wherein the cattle can shelter during wet or cold, windy weather by day or night.

WINTER FALLOWS.

The land intended for spring sown Oats, Barley, Mangold, Turnips, Swedes, Vetches and Maize should now be ploughed—winter fallowed. Generally these crops follow cereals and provide a distinct change that is beneficial to the future crop.

If it so happens that the previous straw crop was cut high owing to bad corn, or an ample supply of stubble was left on heavy land, the straw is valuable in assisting the future working of the soil as the stubble decomposes.

The ploughing of such stubbles affords useful work for the horses when the ordinary fallow land cannot be worked without doing much harm to spring cultivation.

THE PLOUGHING OF GRASS LAND.

The enforced provision of more arable land by the ploughing up of permanent pasture is likely to take place for the spring sowing of cereal crops.

Many persons who are required to plough pasture land and who have no previous experience will wonder when is the best time to plough to obtain the best results, as there are so many opinions, naturally, on such a wide subject.

Where Oats or Barley are to be grown my experience and observation leads me to state that the month of February or early in March is the most likely period for the crops to escape the ravages of wireworm, which is a foe to guard against.

When ploughing is done in the autumn the turf has mainly decayed by sowing time in March, and the wireworm is by that time waiting for the cereal growth, and thus much injury is done to the Oat or Barley crop.

No amount of rolling or the sowing of strong stimulants, such as nitrate of soda or sulphate of ammonia, will check the destruction of the corn crop when once it is attacked by wireworm; accelerate the growth before an attack if you like, but not after.

Where Potatos are to follow the grass crop plough as early as possible, thoroughly burying the grass by the aid of the skim coulter. If once ploughing is done early in February the turf will be readily decomposed, and the ploughing will expose many of the wireworms to the attack by birds, thus cleansing the land to a large extent and providing a good tilth for future cultivation. *E. Molyneux.*

SERBIA AND ENGLISH FARMERS' GIFTS.

The Serbian Government are placing at the disposal of the Agricultural Relief of Allies Committee one of the largest national farm depots in Serbia for the reception and maintenance, pending distribution, of the British live stock which the Committee hope shortly to send out as a gift from farmers in this country. The stock, it is hoped, will in some measure assist the peasants to resume cultivation of the lands to which they are now returning, and the Committee welcomes the help of farmers to make the gift as useful and substantial as possible.

TRADE NOTES.

NEW PRICES FOR APPLES.

OWING to the removal of restrictions on the importation of Apples the Food Controller has issued an Order, which comes into force on the 16th inst., revoking as from that date the Apples and Perry Pears (Sales) Order, 1918. The new Order controls the price of all Apples, whether home grown or imported.

The maximum retail price is 9d per lb., and retailers are required to exhibit notices stating this price. The maximum price on sale by the first owner (i.e., the importer or grower) is as follows:—

HOME-GROWN APPLES.

First owner's price, 58s. 4d per cwt. (packages may be charged for as provided by the Order).

IMPORTED APPLES.

When sold in packages.	At the rate of per barrel s. d.
Nova Scotian, sold in a barrel containing not less than 112lb.	58 4
Canadian, Maine, ditto, ditto, 130lb.	67 8
Virginian and Western States, ditto	67 8
	per case.
British Columbian, sold in a case containing not less than 38lb.	19 9
Washington, ditto, ditto, 38lb.	19 9
Californian, ditto, 38lb.	19 9
Oregon, ditto, 38lb.	19 9
	per cwt.
Any variety of imported Apples, sold otherwise than in the packages mentioned above	56 0

NOTE.—No additional charge may be made for any package.

The prices to the importer fixed for imported Apples are based on the existing freight rates of £1 per barrel and 5s. per case, together with 5 per cent. for primage. These prices may from time to time be modified to meet variation in these charges, or other variations in cost.

On a wholesale sale of any Apples by a person other than the first owner the maximum price is the first owner's price, together with the addition of 6s. per scheduled barrel, or 2s. per scheduled case, or 10 per cent. on the first owner's price in any other case. Transport charges and market tolls may be added, and, in the case of home-grown Apples, certain charges set out in the Order for the use of packages may also be made.

BOYCOTT OF GERMAN SEEDS.

THE proceedings at the annual meeting of the Agricultural Seed Trade Association, held at the Great Eastern Hotel on the 9th inst., was both interesting and lively, and there was a fine spirit abroad which augers well for the future. Under the presidency of Mr. G. P. Miln, many questions relating to reconstruction were discussed, and it was agreed that whatever method of seed testing was finally decided upon, it should be one that would satisfy not only Great Britain but also the Continent and America, and that certificates of germination and purity should be issued by one British station just as in pre-war days they were issued authoritatively from Zurich.

Mr. Miln, who was re-elected President, said the Council advised that discussion on the question of trading with the enemy should be deferred until the peace terms became known, but the meeting considered otherwise, and amid great enthusiasm it unanimously passed a resolution "That members of the Association should have no business dealings with Germans or German associations for five years after the signing of peace." As some members expressed a desire to extend the period it was suggested that the term might be renewed at the end of the five years.

THE NATIONAL FEDERATION OF FRUIT AND POTATO TRADES' ASSOCIATIONS.

ON and after December 6, 1918, the offices of the National Federation of Fruit and Potato Trades' Associations (Incorporated), Ltd., will be transferred to 34/35, Southampton Street, Strand, London, W.C. 2.

HORTICULTURAL ADVISORY COMMITTEE.

THE Horticultural Advisory Committee appointed by Mr. Prothero is empowered to advise him on all matters connected with the industry. The actual terms of reference are: "To advise the Board of Agriculture and Fisheries on all questions connected with the promotion of market gardening, fruit growing, and horticulture generally, and in particular with regard to the distribution of produce and the organisation of the trades connected with these industries in the situation created by the war." The main advisory committee has appointed special sub-committees to deal with various branches of horticulture either separately or by joint session. These sub-committees are.—1. Production: (a) Fruit Sub-committee; (b) Market Garden Sub-committee; (c) Nursery Sub-committee; (d) Flower-growing Sub-committee; (e) Glass-house Sub-committee. 2. Distribution. 3. Education and Research.

BI-COLOURED CHRYSANTHEMUM: *R. O.* Instances are not rare where a Chrysanthemum flower has reproduced its varietal colour on one half of its area and a distinct colour on the other half. In the example sent, of W. H. Thorpe, one half is white, and the other half dull red.

CULTIVATION OF MEDICINAL PLANTS: *C. H. L.* The Royal Horticultural Society publishes a booklet on medicinal plants, price 4d.

FAILURE WITH CHRYSANTHEMUMS: *E. C.* An examination of the specimens sent fails to show any disease or pest, therefore the failure must be due to some error in cultivation or some local influence, which can only be determined by a careful examination on the spot. A slight escape of gas working through the soil into the house might be responsible for the trouble, but the presence of gas would be readily detected. Whether an escape of gas, or the presence of sulphur fumes from a furnace is the cause of trouble, the escape is a slight one, as a large amount of either coal or sulphur gas would cause rapid defoliation. Has the house been painted recently, or has creosote been used in it?

NAMES OF FRUITS: *W. F.* Dumelow's Seedling. —*T. D.* 1, Bramley's Seedling; 2, Lane's Prince Albert; 3, Winter Greening; 4, Emperor Alexander; 5, Northern Greening; 6, not recognised, probably Flat Nonpareil.—*W. B.* 1, Round Winter Nonesuch; 2, Brabant Bellefleur (syn. Iron Apple).

RICHARDIA (ARUM) LEAVES DISEASED: *W. H. S.* The plants are affected with a disease known as soft-rot of Calla. Frequently the disease develops so rapidly that the leaf rots off at the base before it has time to lose its green colour. If the conditions for the development of the disease are favourable after the corms are affected, the softened spots will become dry and darker in colour. In these spots the disease may remain dormant until the conditions are favourable for its further development. In this way the complaint is carried over from season to season. The cause of the disease is a minute bacteria called Bacillus aroideae. There is no known cure, but the disease may be kept in check by changing the soil and selecting only healthy plants for stock.

FIG. 97.—A BI-COLOURED CHRYSANTHEMUM.

Obituary.

Sir Charles Dilke.—We regret to announce the death of Sir Charles Wentworth Dilke, son of the late Sir Charles Dilke, at Brighton, on the 7th inst. He spent a great part of his life in foreign travel, especially in Australia and New Zealand. He was President of the Hove Allotment Holders' Association, and was a great lover of nature, especially of bird-life. He was only forty-four years of age.

ANSWERS TO CORRESPONDENTS.

BASIC SLAG FOR FRUIT TREES: *G. F. C., North ants.* A suitable dressing of basic slag for fruit trees would be 3 ozs. to the square yard of rooting area, which may be roughly estimated by determining the spread of branches and allowing 1 foot or rather more all around as the limit of the fibrous roots. After the slag is applied, very lightly fork the surface soil, taking care not to injure the roots. This fertiliser is slow acting, and not of a caustic nature, therefore it is not so necessary to keep strictly to the quantity advised as in the case of most concentrated manures.

SEEDS FOR BELGIAN CIVILIANS: *A. O. M.* Apply to the Royal Horticultural Society, Vincent Square, Westminster, stating your case and what you are prepared to do by way of help. Possibly help may be afforded through the War Horticultural Relief Fund.

SEABROOK'S BLACK CURRANT: *H. B. W.* The variety of Black Currant known as Seabrook's Black was introduced by Messrs. W. Seabrook and Sons, The Nurseries, Chelmsford.

Communications Received—E. T. E.—Lc.-Cpl. W. R.—W. L.—J. P.—J. H.—J. F.—M. B.—R. W. T. —J. O'B.—R. H. L.—G. B.—E. P. H.—W. F. R.—G. F.—G. E.—J. H.—W. H. S.—D. E. S.—F. H.

THE

Gardeners' Chronicle

No. 1669.—SATURDAY, DECEMBER 21, 1918.

CONTENTS.

ILLUSTRATIONS.

A WHITECHAPEL BOTANICAL GARDEN.

"THE most vivid imagination can hardly picture a botanical garden in the Whitechapel as we know it to-day. Nor is there any record of such an establishment in any of the histories of that part of London which I have consulted. Even Lysons, who dealt very fully with the gardens of the metropolis during the eighteenth century, is silent with regard to any horticultural feature of the district. It is true that Whitechapel is one of the few parishes in London which is almost entirely devoid of historical annals. It has, nevertheless, always been a busy place. In 1778 Noorthouck, in his *History of London*, describes Whitechapel as "a fine wide street, and is the principal eastern entrance into London from the great eastern road. The south side of this street is used for a haymarket three times a week; it is no less a market for meat, being crowded with the shops of carcase butchers on that side all the way for some distance beyond the bars." There were many inns, and "stage coaches to the neighbouring villages ply at all hours of the day."

There were doubtless here, as in all other rural suburbs of London, many gardens attached to large houses, and market gardens in considerable numbers, up to the beginning of the last century. That there was in Whitechapel a garden of a very special and interesting character is proved by a sale catalogue which has just recently come into my possession—a catalogue which is as rare as a book from the press of Caxton! It is a mean-looking little pamphlet of six leaves, somewhat cropped in binding but perfect as to text. The title-page reads: "Catalogue of a Compleat Collection of Plants, Shrubs, and Fruit Trees: Consisting chiefly of valuable Exotics, beautiful flowers, and a large number of Pines in full Fruit and succession; also Garden Chairs, Frames and Utensils, of Mr. WILLIAM BENNETT, Cornfactor and Biscuit Baker, Deceas'd: which (by Order of the Executrix) will be sold by Auction, By Mr. Langford & Son, on Thursday the 27th of this Instant, March 1766; at the Garden, in Whitechapel Fields, next the half-way House, leading to Stepney." After some details as to viewing and whence catalogues may be had, there is an N.B. stating that "Part of the Exotics are in a lesser Garden of Mr Bennett's, near Coal Stairs, Lower Shadwell."

Who was William Bennett? Unfortunately, beyond the statement that he was in business as a cornfactor and biscuit baker, I have been unable to find out anything about him. I had hoped to discover his will at Somerset House; but the only will of that name or period I could discover was one dated January 14, 1765, of William Bennett of Stratford Langthorne in the parish of West Ham, Essex, described as "gentleman," who appears to have been a man of considerable wealth for the time; but there is nothing in the will to lead me to identify him with the cornfactor and biscuit baker. On the other hand, the word "Executrix" on the title-page suggests that there was a will. The fact that the leading firm of London auctioneers, Langford & Son, of the Grand Piazza, Covent Garden—the rooms formerly occupied by Cock, the James Christie of his day, and the friend of William Hogarth, the artist—conducted the auction, is evidence that the sale was regarded as an important one, as it was one of the earliest of its kind to be held in the neighbourhood of London.

The contents of the garden are catalogued in eighty-two lots, and each lot varied in number up to thirty or more plants. The lots were obviously arranged to attract the small amateur gardener, of whom there would probably be many in the neighbourhood. The remarkable fact about the sale catalogue is the approximately accurate botanical character of the nomenclature, a convincing proof that the plants must have borne their names, and that William Bennett's interest was at least as much botanical as horticultural. It is also evident that Bennett attended very scrupulously to the naming of his plants, or the auctioneers would never have been able to undertake the cataloguing in the manner in which we see it done in this list. There were two hot-houses—what we should now term stove-houses—the upper or larger, and the lower or smaller. There were also two greenhouses, and a "little Hot House," in the "Lower Garden," which was probably the one near Coal Stairs, Lower Shadwell, already referred to. It is noteworthy that of many of the plants which were rare in this country a century and a half ago Bennett's garden contained several specimens distributed in the various lots.

I have extracted and arranged in alphabetical order most of the botanical names given in the catalogue, with such corrections and the accepted names of to-day as appeared to me to be necessary in parentheses. The list is as follows: Aloe (= Agave) vivipara, Amonium plinii, Baccharis ivefolia (= Conyza viscidula), Bixa Orellana, Bosia yewa mori (= Bosea Yervamora), Cedrelia (= Cedrela) odorata, Celastrus nervosus, Cereus grandiflora (= grandiflorus), Clitoria Ternatea, Coriaria myrtifolia, Coronilla valentia (= valentina), Cotyledon hemerspericum (= hemisphaerica), Crassula perforata, Dracontium pertusum (= Monstera pertusa), Euphorbia padifolia (? = E. Caput-Medusae), Euphorbia junusfolia, Frutex quercifolia, Haemanthus coccineus, Hibiscus Abelmoschus, Hibiscus subdarissa (= sabdariffa), Hibiscus hirtus, Hibiscus mutabilis, Ledrum (= Ledum) palustre, Lotus erectus, Menispermum similis (? = smilacinum), Mercurialis tomentosum, Mula tridentata, Parkinsonia aculeata, Pisonia aculeata, Polypodium aureum, Psoralea, Rivinia glabra (? = Rivina humilis), Ruellia ciliata, Ruscus andro-

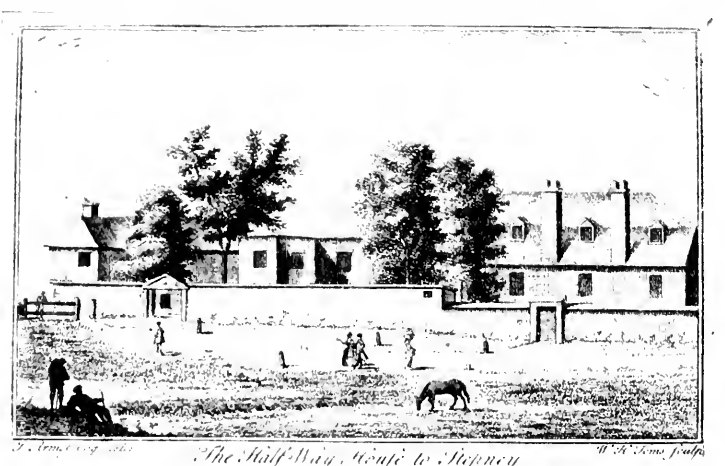

FIG. 78.—THE HALF WAY HOUSE NEXT TO BENNETT'S GARDEN AT WHITECHAPEL.

gynus (=Semele androgyna), Selega (=Solago) spuria, Solanum sodomum (=sodomeum), Spiraea frutex, Stapelia hirsuta, Urena lobata, Viburnum dentatum, and Volkameria inermis.

It will, I think, be admitted that the list is a remarkable one for the time and place. Many of the plants were of comparatively recent introduction, and at least three were grown by Bennett years earlier than the dates recorded of their introduction into Great Britain. For instance, 1779 is given in most books as the date of the appearance of Solago spuria in English gardens; and 1806 as that of both Pisonia aculeata and Ruellia ciliata, yet both these were cultivated by Bennett at Whitechapel forty years earlier. As it may be assumed that his garden was established many years before his death in 1766, it is reasonable to assume that Bennett was one of the first, if not the earliest, to grow Viburnum dentatum (1763) and Ledum palustre (1762), and possibly Monstera pertusa (1752). The Widow-wail, Cneorum, was also grown by him, although 1793 is the date given of the introduction of the first two of the species to find a place in our gardens.

Having given a selection of the botanical names, it will perhaps be interesting to quote a few of the popular ones under which Bennett probably received and certainly grew some of his plants, many of which perhaps had not yet received botanical baptism. We find such names as Anotto (Bixa orellana), African Asparagus tree, Barbadoes Gooseberry, Bonduc or Nicker tree, Bengal Fig, Canary Lavender, China Rose, Cochineal Fig, Cornish Bird-cherry, Cotton-tree, Fiddle-wood, Egyptian Arum, Guinea Hen-weed, Hedgehog Aloe, Horse-shoe Geranium, Ketmia (obviously the English form of the French name Ketmie for Hibiscus), Indian Reed, Jack-in-a box, Persian Cyclamen, Papaw Tree, Physic Nut, Sandbox Tree, Sponge Tree, Tacamahaca, Torch Thistle of Surinam, Toothache Tree, Viva poca, a sort of Andromeda, and Widow-wail (Cneorum), to mention only a few.

It will be noticed that the exotics are not from any one particular part of the globe but from all countries, tropical and otherwise. Living near the port of arrival of all the great merchant ships from the Indies and other parts of the world, Bennett would have had special opportunities of adding to his collections. It is perfectly certain that his garden would be well known to such men as Philip Miller, of the Apothecaries' Garden at Chelsea, as well as to his near neighbour, James Gordon, the famous nurseryman, of Mile End, and probably also to such rich enthusiasts as Peter Collinson and Richard Richardson; it is possible that some reference may be found in the unpublished and voluminous correspondence of the latter to Bennett, but nothing appears to be in the selection printed by Dawson Turner in 1835. So far, then, the name of William Bennett is an entirely new one in the annals of English horticulture. Although his business was that of Corn factor and biscuit baker, there is just the suspicion that Bennett was not exclusively an amateur gardener. The first four lots in his sale rather suggest that he also traded in plants, for they consisted of over 350 Pineapple plants in fruit, succession plants, crowns, suckers, and stumps.

The sale catalogue is precise in stating that Bennett's garden was in Whitechapel Fields, next the Half-way House (clearly a landmark), leading to Stepney. In Rocque's map of London, 1746, the Fields are shown contiguous to the Mulberry Gardens, obviously one of the many country resorts of the citizens of the eighteenth century. According to the map in Baldwin's "New Complete Guide," 1766, the Fields occupied a broad space on the south side of Whitechapel Road and Mile End, and extending east from the London Hospital down nearly to Ratcliff Highway. From the Crace Collection in the British Museum I have obtained photographs of two contemporary prints. In the one reproduced in fig. 98 we get an interesting aspect of the East End in its rural days, with the Half-way House mentioned as being next to Bennett's garden. It was probably the residence of some City magnate. The other print, reproduced in fig. 99, shows a portion of the Fields partly taken up with a camp, and it may be that Bennett's garden and house were situated somewhere in the distance. At all events these two views help us, if not to reconstitute Bennett's garden, to get some idea of its atmosphere and immediate surroundings. With its crowded streets and alleys it would to-day be a very difficult matter to locate the exact spot of the Whitechapel Fields of a century and a half ago. *W. Roberts.*

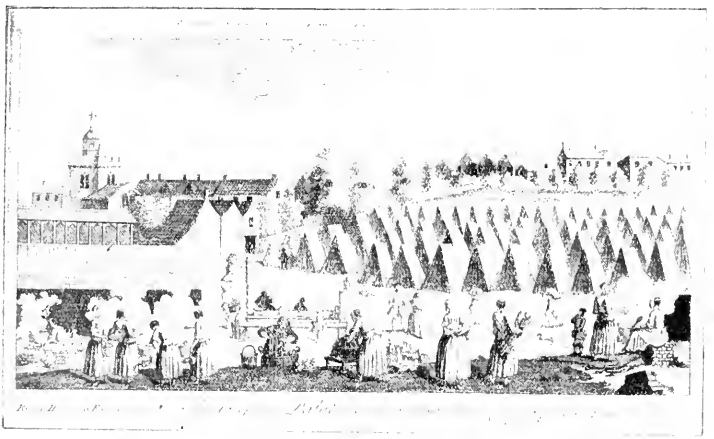

FIG. 99.—CAMP IN WHITECHAPEL FIELDS.

ORCHID NOTES AND CLEANINGS.

ODONTOGLOSSUM CRISPUM RAGGED ROBIN.

A FLOWER of this magnificent and distinct form of Odontoglossum crispum, taken from a plant imported ten or twelve years ago, is sent by Richard Ashworth, Esq. It has all the beautiful points which have made O. crispum a leading favourite in gardens, and its distinguishing features are so marked that it is easily distinguished from other forms, a quality which many varieties cannot lay claim to. The flower is just over 4 inches across, and has sepals 1½ inch wide, white, tinged with violet at the back, and bearing clusters of large reddish-purple blotches in the centre. The petals are 1⅞ inch across, deeply and irregularly fringed at the margin, white, with one or two reddish-purple spots in the middle. The crimped and fimbriated lip is white with a large chestnut-red blotch in front of the yellow crest.

NEW HYBRIDS.

BRASSO-CATTLEYA GENERAL DIAZ.—A charming flower of this new cross between Cattleya Pittiana and Brasso-Cattleya Madame Chas. Maron, is sent by J. Ansaldo, Esq., Rosebank, Mumbles. The influence of Cattleya granulosa in C. Pittiana is shown in the firm substance of the flower and the shape of the lip. The sepals and petals are cream-colour tinged with lilac; the fringed lip is rosy-lilac with yellow lines from the base.

BRASSO-CATTLEYA NICOLO (parentage unrecorded).—This new hybrid is also sent by Mr. Ansaldo. It is a pretty flower, with primrose-yellow sepals and petals, and ample, light rose-coloured lip with pale yellow veining.

HYBRID ORCHIDS.

(Continued from November 16, p. 193.)

Hybrid.	Parentage.	Exhibitor.
Brasso-Cattleya General Diaz	C. Pittiana × B.-C. Madame Chas. Maron	J. Ansaldo, Esq.
Brasso-Cattleya Pearl	B.-C. Dighyano-Schroderae alba × C. intermedia alba	F. J. Hanbury, Esq.
Brasso-Cattleya Ruby	B.-C. Mrs. J. Leemann × C. labiata Pertersii	Flory and Black.
Brasso-Laelio-Cattleya Antoinette Gatton Park Var.	C. Portia coerulea × B.-L. Helen	Sir J. Colman.
Brasso-Laelio Cattleya Violetta	B. L. Dighyano purpurata × C. Warscewiczii	Armstrong and Brown.
Cattleya Cantharie	labiata Mrs. E. Ashworth × Dionysius	C. J. Phillips, Esq.
Cattleya Eleanore	Warscewiczii F. M. Beyrodt × Hardyana	Baron B. Schröder.
Cattle a Istria	Mantinii × Lord Rothschild	H. T. Pitt, Esq.
Cattleya Ypres	Fabia alba × Mrs. Pitt white var.	Sandera.
Cypripedium Florence Fisher	Gracceae × insigne Harefield Hall	Mr. A. Fisher.
Cypripedium Peace	Psyche × Lathamianum	W. H. St Quintin, Esq.
Dendrobium Hanburyi	Dalhousieanum × fimbriatum	F. J. Hanbury, Esq.
Laelio-Cattleya Chestan	Fortuna × Dominiana	C. J. Phillips, Esq.
Laelio Cat leya Crat	L.-C. Dominiana × L. tenebrosa	
Laelio-Cattleya Cumbe	C. Adula × L.-C. St Gothard	Charlesworth and Co.
Laelio-Cattleya Marshal Foch	L.-C. Myrrha × C. Luegeae	H. T. Pitt, Esq.
Laelio-Ca tleya Noyon	L.-C. Hippolyta × C. Fowbesii	F. J. Hanbury, Esq.
Laelio-Cattleya Rufus	L.-C. Amazone × C. Dowiana aurea	C. J. Lucas, Esq
Laelio-Cattleya Sunbeam	C. Tankervilliae × L.-C. Wisetonensis	C. J. Phillips, Esq.
Odontioda Cheltonces	Odm. Laurenceanum × Oda. Joan	
Odontioda Cliftham	Odm. Illustrissimum × Oda. Joan	
Odontioda Cornelest	Oda. Tambeauiana × Odm. Iora	Armstrong and Brown.
*Odontioda Ernestii var. President Clemenceau	Odm. Wilckeanum × Oda. Charlesworthii	
Odontioda Gwendoline	Odm. eximium × Oda. Madeline	Charlesworth and Co.
Odontioda Joyce	Odm. Harryanum × Oda. Royal Gem	Charlesworth and Co.
Odontioda Marjorie	Odm. Alexandrae × Oda. Joan	Charlesworth and Co.
Odontioda Marshal Foch	Charlesworthii × Vuylstekeae	Armstrong and Brown.
Odontoglossum Lady Veitch	Hyland anum × Armstrongiae	Armstrong and Brown.
†Odont glossum Nyso var. Momus	eximium × Alexandrae	Charlesworth and Co.
Odont glossum Rosina	eximium × Lady Pirrie	Charlesworth and Co.
Sophro-Cattleya Ardens	C. Fabia × S.-C. Saxa	Sanders.
Sopbro-Cattleya Gwendoline	C. Octave Doin × S.-C. Wellesleyae	J. Ansaldo, Esq.

* Shown at R.H.S., December 3, as Oda. President Clemenceau.
† Shown at R.H.S., November 19, as Odm. Momus.

WOMEN IN HORTICULTURE.

THE subject of women with respect to their fitness for fresh fields of industry is now being discussed. They have filled a large place in horticulture since the commencement of the war, but it is twenty-three years since women were first employed as improver gardeners at Kew. Swanley College had been training women in horticulture for some time, and two of the most promising were engaged for a two years' course at Kew. The innovation attracted a great deal more public attention than it deserved, owing to the decision that whilst at work the women were to be dressed as boys, and they therefore wore knickers, jacket, and cap. Women continued to form part of the garden staff for about seven years, in which period ten were employed. They were a success at Kew, but only one of them stuck to horticulture and is still a gardener, the others finding some other calling which they liked better. This was not an encouraging result, and as in those days there were plenty of young professional gardeners who were anxious to get into Kew, it was decided that they should have preference.

A difference between the early training of garden boys and these young women, as well as a difference, in some cases a wide one, in their general education, made it difficult to treat them all alike. Still nothing happened to justify any objection on the part of men to the woman gardener, and if she had thought the calling good enough she would have been welcome. But she did not, and notwithstanding all that has happened in consequence of the war she will not now, after she has been through the mill, unless it is made worth her while.

When the men were wanted for war service the women came forward to help to carry on, and Kew was fortunate in securing trained women from the start. Most of them came as war workers, and although the hours were long and the pay low, they showed the right spirit by doing their best, whatever the job was. Some of them were afterwards induced by offers of better pay and shorter hours to go elsewhere, and vacancies had perforce at times to be filled with women who had little or no training. These, however, rendered useful service, and were quick in getting into the gardener stride. A few found the work overheard, whilst all objected to the long summer hours, 6 to 6. A concession was made to ease the long afternoon by a break of half an hour at 4 o'clock for tea. The following year the day was shortened by an hour, work ceasing at 5 instead of 6, but the daylight saving scheme made it necessary for a portion of the staff to return for an hour after tea,* so that really the working day for gardeners was lengthened by an hour during summer. The women then petitioned for a later starting time in mornings, but this they failed to get.

The present working hours, wages, etc., are set forth in the following particulars which were sent to applicants for employment: "During the war women who have received a good training, either at an horticultural college or in a garden of repute, are employed at Kew to replace gardeners who have enlisted. Their wages are 4s. 4d. per day, with a weekly war bonus of 12s. 6d., and 9d. per hour for Sunday duty and overtime. Their hours are: Summer, 6 a.m. to 8; 8.45 to 12; 1 to 5 p.m. Winter, 8 a.m. to 12; 1 to 4.30 p.m.; two Saturday afternoons in three free. Applicants, who should be healthy and strong, unmarried, and between 20 and 40 years of age, must furnish particulars of training, and age, with a testimonial from present or last employer. They are required to live in the neighbourhood of Kew."

The women are keen with respect to what is termed the rights of the worker. Gardeners have hitherto accepted as inevitable long working hours and low wages, and attempts to improve matters have not met with much support. But the women are not so disposed to put up with conditions whose only justification is that they are usual. They are educated, and have been used to the decencies of life. Their influence, therefore, is in an uplifting direction, and for this they are entitled to the encouragement and gratitude of those who have experienced the lot of the average journeyman gardener. I am quite certain these women will not take up gardening as a suitable calling, and be satisfied with the pay, etc., that men have accepted. Employers who expect what is known as polish, education, respectability, gentlemanly manners, etc., in quality with various names as well as skill in horticulture, are likely to find that it is an extra, and must be paid for.

It has been asked whether women are capable of lifting horticulture into a higher place among industrial arts than it has occupied hitherto. The answer to this is that intelligence brains will tell, whatever the sex may be, and horticulture ought to be the gainer, if, as a result of the war, its practitioners are better equipped from the start than they formerly were. The question of physical fitness will not come in when the drudgery of the garden is separated from the art, and, as in the case of other callings, is performed by the strong and unskilled. The handy man, "our gardener," whose duties include much that is not gardening, will always be in demand, and it is unlikely that the women gardener will poach on his preserves. Nor will she compete with the market garden labourer. It is in what we may call the science of horticulture that women may succeed, and in doing so prove a help, not a hindrance, to all-round betterment.

Much will depend upon the early training of young women who desire to become gardeners. The lack of experience of the right kind is evident in most of those who are working as gardeners now. The young man gardener has had four or five years' practical training by the time he is twenty, but there must be objections to starting good class girls of fifteen or so on the same course. It depends on the way girls are taught to view such things. Boys know that as soon as they are old enough they will be put into harness. Hitherto girls whose prospects demanded that they should be able to earn a living have had the factory, shop, or domestic service as a starting board. If they are willing to try the farm and garden as the boys do, they may go through all right and turn out well.

I may be wrong, but speaking from long experience, and an intimate acquaintance with the ups and downs of gardening and gardeners, male and female, I must own to a conviction that unless the conditions are considerably improved, gardening will not hold out good prospects for educated young women. W. W.

* Paid for as overtime.

SOME OF THE NEWER ROSES.

(Concluded from p. 236.)

ROSES INTRODUCED IN 1917.

OF the Roses introduced in 1917 I can speak with less certainty, and I will only say I have good reasons for the suggestions I make. I will take these under the raiser's headings:—

MESSRS. A. DICKSON AND SONS. This firm offers:—

COL. OSWALD FITZGERALD. A beautiful crim-

FIG. 100.—WOMEN GARDENERS AT KEW, 1917.

son Rose of fine size, not large enough for show, but a fine decorative variety.

C. V. HAWORTH. I expect a good deal of this Rose; it is scarlet-crimson in colour, probably good in every way, but not very large nor very full.

DAVID MCKEE.—This I greatly admired: it is of show form, and a deep yellow. It has the Pernetiana fault of dying back in winter, but grows again well.

K. OF K. An almost single, bright velvety-scarlet variety, and an improvement on that good single Red Letter Day.

KOOTENAY.—Said to be a much-improved Kaiserin Auguste Victoria, and if it proves so it will be welcome, though we now have many good Roses of similar colour.

MOLLY BLIGH.—Very promising, large and scented. A pink Rose of good shape.

MRS. FRED SEARL.—Silvery and carmine, very large and quite up to show form.

MESSRS. HUGH DICKSON:—

ETHEL DICKSON. A salmon rose-coloured variety with silvery reflexes; the raisers de-

scribe it as a bedding variety, but it probably is at times up to show form.

GOLDEN SPRAY.—A distinct break: a large, single, yellow Rose of arching growth.

D. M. BARTON. Deep crimson; of fine shape, fair size. A garden Rose of which I expect a good deal.

LILLIAN MOORE. The 1,000-Dollar and Silver Medal Rose. This ought to prove one of the very best yellows, and probably an improved Mrs Aaron Ward.

LUSTRE STANDARD. A crimson single Rose, with yellow anthers. We have few of this colour among the best singles.

MESSRS. McGREDY AND SON :—

GOLDEN EMBLEM (see fig. 101).—This must strongly compete with Lillian Moore for the palm among the new yellow Roses. It is an improved Rayon d'Or in the matter of growth, and it does not lose foliage as Rayon d'Or does.

FIG. 101 ROSE GOLDEN EMBLEM.

GLADYS HOLLAND.—A fine show Rose; buff, shaded yellow, with the outer petals tinted rose. If vigorous enough this should be an acquisition.

MISS WILLMOTT.—An all-round beautiful Rose, sulphury cream; may be first-class if vigorous.

MRS. C. E. SHEA.—Red, shaded rose; likely to be a useful garden Rose. There will be confusion, I fear, between Roses called after different members of the same family.

NOBLESSE. A yellow Rose, tinged rose on the outer petals; very free, and holds its blooms erect. A good garden Rose, and probably at times up to show form.

M. PERNET DUCHER :—

Of the six new Roses brought out by this firm I have no positive knowledge, and I fancy our English growers are mostly in the same position. I myself have planted Mme. Christie Marvel and Raymond. If I had taken another dip in the "lucky bag" I think my choice would have been Mme. Melba Sabatier or Senorita Carmen Serb.

MESSRS. WM. PAUL AND SON have one or two new Roses, of which W. C. Clark (H.T.) seems very promising.

MR. W. EASLEA has a climbing sport to Mme. Abel Chatenay; a dwarf Polyantha, Little Meg, white, sometimes tinted crimson, a seedling, I understand, from Shower of Gold, also Tiny Tim, a coppery pink Rose in the style of Perle d'Or.

Of the older Roses which have been most admired in my own garden, Countess Clanwilliam, Mrs. Vanderbilt, Lady Greenall, Mme. Jules Bouché, Willowmere, Lyon, Mdme. Herriot, Mabel Drew, Duchess of Westminster, Mrs. Amy Hammond, Edith Part, Queen Mary, St. Helena, Cissie Easlea, Rayon d'Or, Mrs. C. E. Pearson, Avoca, Duchess of Wellington, General McArthur, Lieut. Chaure, Mme. Segond Weber, Marquise de Sinety, Melody, Paul Lédé, Mrs. H. Bracklebank, Mrs. R. D. McClure, Pharisaer, and the Teas Alex. Hill Gray, Harry Kirk, Lady Hillingdon, Miss Alice de Rothschild (very fine and good grower), Molly Sharman Crawford, Mrs. Foley Hobbs (grand), Mrs. Herbert Stevens, Mrs. Myles Kennedy and W. R. Smith have all been very fine. *L. C. R. Norris-Elye, Otterby Manor, Louth, Lincolnshire.*

BAUMANN'S REINETTE APPLE.

UNTIL coming here I was familiar only with the name of this Apple. Recognised authorities do not speak highly of its flavour. A small crop last year enabled me to prove that it keeps well into the beginning of the New Year. This season the yield was very heavy—no other variety equalled it in this respect, and the colour of the fruits was exquisite. Such a bright, rich crimson colour I never remember seeing on any Apples before. What a pity it can claim only a second place in flavour. *C. T., Impthill Park Gardens, Impthill.*

The Week's Work.

THE KITCHEN GARDEN.

By F. JORDAN, Gardener to Lieut.-Col. SPENDER CLAY, M.P., Ford Manor, Lingfield, Surrey.

Tomatos.—Tomato plants should be kept on the dry side to prevent attacks of disease, including mildew. The plants should be grown in a night temperature of about 55°, and must never be exposed to cold draughts. Keep the plants thinly trained to allow light and air to reach them freely, and remove all side-shoots as they appear, but do not cut off many leaves at this season. Remove the fruits as soon as they show signs of changing colour; they will ripen as well in a warm, dry room as on the plants. Top-dress the roots with a mixture of rough, turfy loam and decayed manure. Sow a further pinch of seed of the variety Sunrise to raise seedlings in readiness to take the place of exhausted plants in the spring. Tomatos growing in 3-inch pots should be placed near to the roof-glass; shift them into larger pots as more rooting space is required. Pot moderately firmly in a mixture of sandy loam, leaf-mould, and fine lime rubble. Ventilate the house with care, and endeavour to obtain healthy plants and a stocky growth.

Endive and Chicory.—These salads will be in greater demand as Lettuces become scarcer. If plants are being blanched in frames by covering them with pots or tiles, other plants in the same pits should be protected from frosts and ventilated during the day to prevent damping. Surplus plants may be taken up about a fortnight before they are required for use and placed in a Mushroom-house or other dark, warm place. Tie the outer leaves over the centres of the plants when the foliage is dry, give the roots a good soaking of water, and keep them well supplied with moisture without overhead waterings.

French Beans.—Seeds of French Beans may now be sown more freely with better prospects of success; successional sowings made once a fortnight will maintain an unbroken supply of pods. Use 7- or 8-inch pots and let them be three parts filled with compost consisting of three parts loam and one part manure from a spent Mushroom-bed; make the soil moderately firm. French Beans require plenty of sunlight, a temperature of 65° to 70°, and atmospheric moisture. Give the plants liquid manure when the pots are filled with roots. Dwarf varieties, such as Magpie and Ne Plus Ultra, are best to grow now, while Canadian Wonder is the most useful variety at a later period until the climbing varieties can be sown.

Cucumbers.—Plants in full bearing require liberal feeding and top-dressings, applied little and often, to keep them prolific in cropping and healthy. Stimulating liquids should be weak and various, and if made 10° warmer than the bed so much the better. The material used for top dressing can hardly be too rough; moderately light sandy loam from which the finest particles have been removed, is suitable; this, with lime-rubble and charcoal, should always be kept warmed, ready for use. Maintain a moist atmosphere without direct syringing. The temperature may rise to 70° on mild nights, falling to 65° in colder weather. Ventilate the house a little on bright days, without exposing the plants to cold draughts. Make a further sowing in small pots to raise plants ready for planting out early in the New Year.

THE ORCHID HOUSES.

By J. COLLIER, Gardener to Sir JEREMIAH COLMAN, Bart., Gatton Park, Reigate.

The Cool House.—Some of the plants in the cool Orchid houses, including Odontoglossums, are in full growth, and others are resting. Those which are dormant should be placed by themselves, where they may receive only sufficient water to keep them plump and healthy. Those that are active should be encouraged to make strong, healthy growth. Plants that are developing their inflorescences should be ex-

ASTER AMELLUS.—MR. KING, GEORGE

posed fully to the sunlight in order that the spikes may grow strong and produce flowers of good texture. They should be watched nightly for slugs, which are prone to feed on the young flower-spikes, often as soon as they are observable at the base of the pseudo-bulbs. The insects may be trapped by placing Lettuce-leaves or hollowed-out Potatos on the stages between the pots and on the surface of the compost. A band of dry cotton-wool placed around the base of the flower-spike is sometimes helpful as a protective measure. The house should be vaporised once every fortnight to destroy thrips and aphides.

Odontoglossum. – Odontoglossum Uro-Skinneri, O. luteo-purpureum, and others of their section are developing fresh roots from the bases of the young growths, and any in want of fresh rooting materials may be given attention. These fleshy-rooted plants should not be potted too firmly, and the pots should contain plenty of drainage material. The compost should be very porous: it may consist of three parts Osmunda-fibre, or A1 fibre, and one part Sphagnum-moss, the whole cut up roughly and well mixed with crushed crocks. Only sufficient water is needed to keep the surface moist until the new pseudo-bulbs show signs of swelling, after which the supply of moisture may be increased gradually. Grow the plants in the warmest part of the Odontoglossum house.

Oncidium. Oncidium ornithorynchum has recently passed the flowering period, and the plants should be kept on the dry side for a short time, but as soon as roots are seen to be developing from the bases of the young growths attention should be given them. If the plants are in pots of a suitable size and the compost is in good condition, they need only to be resurfaced with fresh material. Some will require repotting, and for these a similar compost may be used to that recommended for Odontoglossum Uro-Skinneri, but the fibre should be cut into smaller portions. O. cheirophorum, together with O. variicosum and O. tigrinum, are in bloom. When the spikes are cut the plants should be rested in a cool, dry house, affording them only sufficient moisture at the roots to keep the pseudo-bulbs rigid.

PLANTS UNDER GLASS.

By E. HARRISS, Gardener to Lady WANTAGE, Lockinge Park, Berkshire.

Cyclamens.—Young Cyclamen plants which were raised from seed sown in the autumn are ready for transference to larger receptacles. They may either be potted in 2½-inch pots or pricked out into boxes, and the latter method may be preferable, as it entails less labour. The young plants also will not be so liable to suffer a check in boxes as they would if potted. A compost of two parts loam to one of leaf mould, and a liberal quantity of coarse sand, or crushed brick rubble, will provide a suitable rooting medium. See that the boxes are clean and well drained, and make the soil quite firm. Place the boxes near the roof glass in a house having a moist atmosphere, and endeavour to maintain an equable temperature of about 55°. Lightly spray the plants with tepid rain-water twice a day when the weather is fine and damp their surroundings two or three times daily. Should aphis attack the leaves lightly fumigate the house.

Begonia Gloire de Lorraine.—When the earliest plants of this Begonia have finished flowering they may be partly cut back and placed closely together in a house or pit having a temperature of about 45° to rest for a few weeks. The roots should be kept on the dry side during this period. After resting the plants will develop shoots suitable for cuttings much more freely when they are once started into growth again. The later plants will flower during the greater part of the winter if carefully watered and fed. Keep the flower stems neatly tied to their supports or the plants will quickly assume an untidy appearance.

Violets. The weather has been very favourable for Violets in cold frames, and the plants are looking strong and healthy. It has been possible to remove the lights entirely for several consecutive weeks, and this treatment has greatly benefited the plants and has rendered them sufficiently hardy to pass through the remainder of the winter. Continue to give them an abundance of fresh air whenever the weather is favourable. In the event of severe frost cover the glass with mats and litter. Remove decayed leaves regularly and lift the flower buds above the leaves. Stir the soil between the plants with a pointed stick and sprinkle a little well-seasoned soot about the roots. Water the roots in the early part of the day when this is necessary; only a little water will be required for the next few weeks.

THE HARDY FRUIT GARDEN.

By JAS. HUDSON, Head Gardener at Gunnersbury House, Acton, W.

The Strawberry Beds.—Take the first favourable opportunity, when the weather is fine and the soil dry, to examine newly-planted Strawberries. Tread lightly around the crowns to make the plants firm at the roots, for they may be lifted out of the soil by severe frosts. After removing weeds, hoe the soil between the plants. When these details have been carried out the plants will not need much further attention for months to come. Replace weakly plants by stronger specimens from the surplus stock. Alpine Strawberries are very promising, and I do not see a weakly crown amongst our plants. The older beds of Alpine varieties may be top-dressed with well-decayed leaf-mould after it has been passed through a coarse sieve. Other Strawberries may be treated in a similar manner, but for these we use well-rotted manure in preference to leaf-mould, breaking it down somewhat when it is put on the beds; do not cover weeds with either the leaf-mould or manure.

Material for Top-Dressing. Procure some good soil, i.e. fading that, well-rotted manure, in readiness for use as top-dressing as soon as the work of pruning is done. It is not essential to fork the material into the soil at the time of application; possibly it may be more convenient to apply it when the ground is somewhat hard with frost and to spread it later. For preference use a little fresh loam for Cherries and Plums, having first applied a moderate dressing of a concentrated fertiliser suitable to stone fruits; that is, one containing plenty of phosphates and potash. Lightly fork the fertiliser into the soil before the top-dressing of loam is applied. When dealing with Apple trees examine the roots to see if American Blight is present, and if the pest is detected apply a soil disinfectant freely, and cover it with soil at once. Remove all suckers in the case of all trees. Trees that are planted against walls with south aspects may need watering.

The Fruit Room. Fruit is keeping quite as well as usual, and the small quantity must be used with great economy to make it last as long as possible. Fruit intended for rail transit should be packed with great care. Paper shavings are as good as any other material for packing, and moss, when dried and carefully picked over, is also suitable. When the temperature drops suddenly use means to exclude frost from the fruit-room.

FRUITS UNDER GLASS

By W. J. GRISE, Gardener to Mrs. DEMPSTER, Keele Hall, Newcastle, Staffordshire.

The Cherry House. The roots of Cherry trees planted in inside borders should be kept thoroughly under control by taking out a trench about 4 feet from the main stem, and refilling it with fresh loam. In this way a mass of fibrous roots is formed near the surface, but unless the trees have grown too vigorously it is not necessary to prune them. Very little branch pruning is required beyond reducing the summer-pruned side shoots to two or three buds. Before the borders are top-dressed with fresh calcareous loam thoroughly cleanse the house and wash every branch carefully with a suitable insecticide. Ventilate the house freely or the trees will be hastened into growth unduly.

Early Peaches and Nectarines. There will be no difficulty in retarding the earliest pot trees of Peaches and Nectarines for at least another month. In the meantime, let the trees be well exposed to the light, in a cool, airy house, and on no account use fire-heat except in times of frost, when only sufficient should be used to prevent injury from extreme cold. The early permanent trees will be greatly benefited by a long period of rest, but it must be borne in mind that where it has been the custom to start the house early, the roots become active, and the trees swell their buds in the absence of fire-heat, and especially during mild weather. A little warmth in the pipes then becomes essential, but until the flower-buds show colour the night temperature should not exceed 45°. For the present ventilate the house freely, both day and night, and continue to do so for so long as mild weather prevails.

The Forcing Houses.—As there is not sufficient fuel to force fruits very early, advantage should be taken of the opportunity to get the houses thoroughly cleansed, painted and repaired. Where several houses are heated from one boiler it is advisable to have screw-plugs inserted in the pipes in order that they may be emptied of water in times of frost.

Manures.—As it becomes increasingly difficult to obtain farmyard or stable manure from outside sources, the best use should be made of all garden refuse. Any animal manure to be had should be well mixed with fallen leaves, lawn mowings, turf edgings, decomposed vegetable matter, wood ash, house sewage and garden refuse. It will greatly add to the quality of the compost if the heap is saturated with manure-water after each turning. Failing good farmyard manure such a compost provides the best substitute for mulching fruit borders.

THE FLOWER GARDEN.

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

Frame Stock.—Should severe frost set in it may be as well to remove Calceolaria amplexicaulis and large-flowered Pentstemons from frames to a structure from which frost may be excluded. The former plants will, no doubt, be rooted, and should not be over-watered. The latter occasionally is slow to root, and should rooting be not effected, the soil in the boxes must still be kept moist. Damp in frames is very injurious to hardy stock, and always enough air should be admitted to neutralise its effects. Any green surface growth should be removed, and some clean sand which has been heated for a few hours, hot enough to sterilise it, scattered evenly among the cuttings. Common Paris Daisies and Marguerite Mrs. Sander should not be left longer in the frames. Although not yet rooted there need be no fear that they will not root before long.

Work in Wet Weather. The horticultural sundriesman, while lightening the labour of the garden to a great extent, has at the same time spoiled workmen for many jobs which he at one time was expected to do in bad weather, and did before the former's advent. At this period of the year the stock of garden baskets was renewed, labels of all sorts made with knives, and permanent labels rewritten, or more probably "printed," in bold characters. Flower sticks also were whittled to a nicety as supports for Heaths, Achimenes, and Pelargoniums, and painted, and stored. Now, probably, the only kind of work of this nature that is continued is the tying of mats and the making of Birch-brooms. It was not unusual, too, to repaint the inside woodwork of vineries, and some lads were adepts at all these little jobs, which served to pass many dreary days in a pleasant manner. I think it not unlikely that even this present winter some of these jobs may have to be carried out at home. Seeds, where they have been saved, will need cleaning and placing in bags or boxes, with name and year of growth. Several plants were late in ripening seeds. Hollyhocks and Tritomas did not mature here at all, but they finish nicely indoors, and, indeed, I have a lot of young autumn-sown Hollyhocks growing well from seeds which were sown quite green. Mould must, however, be guarded against in the case of immature seeds by keeping them absolutely dry and spread out thinly, so that they do not heat. Usually, too, at this time, Pelargoniums in boxes must have their withered leaves removed. They may induce damping of the stems if left, especially when fire-heat is only used to preserve the plants from frost.

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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.*

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 38.5°.

ACTUAL TEMPERATURE:—

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, *Wednesday*, December 18, 10 a.m.: Bar. 30; temp. 48°. Weather—Dull.

Fresh Vegetables as Preventives of Disease.

In spite of the fact that it is now proved beyond question that all risk of scurvy may be prevented by proper dieting, outbreaks of scurvy have occurred recently at various times among His Majesty's Forces at home and abroad. Hence the Food (War) Committee of the Royal Society has done well to issue a memorandum on the Cause and Prevention of Scurvy. The memorandum, which summarises our knowledge on the subject, should be in the hands not only of all medical men, but also of all housewives.

We have in this journal already published the essential facts relating to the cause of scurvy, but in view of the great importance of the subject they will bear repetition.

Scurvy is a "deficiency" disease; that is, it is due to the absence from the food of a certain definite substance. This substance is known as an accessory food substance, or vitamine. The vitamine, which is the natural preventive medicine which protects the body against scurvy, is contained in greater or smaller quantities in *fresh* food. Oranges, Lemons, and fresh green vegetables contain large quantities of vitamines. Fresh vegetables, such as Swedes and Potatos, contain considerable quantities, and fresh meat and milk contain small amounts.

Dried and preserved foods contain little or none. Vitamines are very sensitive to heat—the longer food is cooked the more the vitamines which it contains are destroyed.

Stewing, for example, causes the destruction of vitamines, and, therefore, such vitamine-containing articles of diet, as Potatos, should not be prepared for table by stewing, but should be cooked quickly, as, for instance, by rapid boiling.

The common practice of adding soda during the cooking of vegetables should be abandoned; for although the colour may be improved, the vitamines contained in the vegetables are destroyed by it.

Perhaps the most interesting point made in the memorandum is the fact that West Indian Lime juice as ordinarily prepared is, despite the common opinion to the contrary, useless as a preventive of scurvy.

The belief that it is a preventive is due to the fact that the so-called Lime juice which was used successfully in the Navy in the first half of the 19th century as a preventive of scurvy was not Lime juice at all, but Lemon juice obtained from the Mediterranean region. In Nares' Arctic expedition Lime juice prepared from West Indian Limes was substituted for the first time for Lemon juice, with the result that serious outbreaks of scurvy occurred.

The great value of Oranges as a means of protecting the body against scurvy deserves to be widely known. Although it has been stated above that vitamines are very sensitive to temperature, it should be remembered that it is the *time* of cooking rather than the temperature which affects these anti-scorbutic accessory food bodies. The longer the cooking, the more the vitamines are destroyed. Hence, where Potatos have to be relied upon to provide most of the winter vegetable diet, they should be cooked by plunging into boiling water, and the boiling should be continued for not more than 20-30 minutes.

Dried Peas, Beans, and Lentils, although rich in food, contain no vitamin s; but if they are soaked in water for 24 hours the vitamines reappear as germination begins, and therefore after this treatment their value as protectors against scurvy is great.

Finally, it should be remembered that deficiency of vitamines, even though it may be not great enough to cause scurvy, may lead to general weakness and lowered vitality. It is therefore desirable in the interests of the people's health that the national diet should consist of large quantities of fresh vegetables, and that supplies of vitamine-containing articles of diet should be available throughout the year.

Coloured Plate.—The varietal forms of Aster Amellus constitute a group of charming autumn-flowering plants of unquestionable hardiness; they are of great value in the herbaceous border, and very suitable for the supply of flowers for cutting. Among the numerous varieties, King George, which forms the subject of our coloured Supplementary Illustration, occupies a very high position. It has a very neat habit of growth, and with good cultivation there is no difficulty in obtaining specimens a yard in diameter. Such plants present a fine picture during September when covered with bright purple-blue flowers, each measuring from 2½ to 3 inches in diameter. The golden disk enhances the attraction of the blooms, but to some artistic tastes the flowers are even more attractive when, several days old, the disk has turned to a bright mahogany tint. Aster Amellus King George received the Royal Horticultural Society's Award of Merit on September 8, 1914, when shown by Mr. AMOS PERRY. Both in gardens and in the flower markets this handsome perennial Aster has already become very popular, and American growers have also recognised its great value.

The Wheat and Potato Crops. — The total production of Wheat in Spain, the United Kingdom, Italy, Luxembourg, Netherlands, Switzerland, Sweden, Canada, the United States, India, Japan, Egypt, and Tunis is estimated at 1,073,027,000 cwts., or 18.1 per cent. above last year, and 7.1 per cent. above the average of the five years 1912-16. The Australian Wheat production for 1918-19 is estimated at 43,305,000 cwts., or 29.9 per cent. below 1917-18, and 26.8 per cent. below the average of the five years 1912-16. The yield of Potatos in France, Great Britain, Italy, Luxembourg, Sweden, Canada, and the United States is estimated at 579,031,000 cwts., or 11.1 per cent. below last year's production, and 4.0 per cent. below the average of the five years 1912-16.

Chamber of Horticulture.—Lieut. JOHN F. GOAMAN (late 3rd Royal Berks.) has been appointed Assistant Secretary (Statistics) to the Chamber of Horticulture. The Secretary informs us that the office of the Chamber will be closed from December 23 to 29 inclusive.

The Home Seed Industry.—At the annual meeting of the Agricultural Seed Trade Association of the United Kingdom, held on December 9, and presided over by Mr. G. P. MILN, to which we referred on p. 244, the desirability of providing a Diploma for those engaged in the highly technical work of seedsmen was advocated. Gratitude was expressed by the chairman for the assistance rendered by the Food Production Department in obtaining exemptions for the essential experts, and he also expressed the belief that this country could become less dependent on foreign sources of supply than in the past, as, for example, by growing certain agricultural grass seeds for which there is a large demand both here and abroad. Too much reliance had previously been placed on German sources of supply, and there is no reason why experiments in growing for seed such grasses as Rye grass, Cocksfoot, Meadow Fescue, Timothy, Meadow Foxtail, and perhaps the Poas should not be made in suitable districts of Great Britain. The members of the seed trade have put in unstinted measure their time and energy at the disposal of the State, and by this action have not only rendered invaluable assistance to the State but also conspicuous service to the general community. At the annual dinner held after the meeting it was announced that the President of the Board of Agriculture had appointed Mr. LAWRENCE WEAVER, C.B.E., formerly Controller of Supplies in the Food Production Department, to act as temporary commercial secretary of the Board. In this capacity Mr. WEAVER will be in charge of reconstruction measures for the better organisation of the commercial side of agriculture, and will supervise the provision of cottages and other buildings on small holdings and farm colonies required for the settlement of ex-Service men on the land. The announcement of this appointment will be generally welcomed, for Mr. WEAVER has, in his capacity as Controller of Supplies, shown administrative abilities of the highest order. By his clearness of vision, resolution and energy he has carried out the difficult and intricate work of controlling agricultural supplies with such remarkable success that the Board is to be warmly congratulated on having secured his services for the not less important work of reconstruction.

Women Land Workers Endow a Hospital Bed.—At the recent exhibition in aid of the Garrett Anderson Hospital for Women, the Land Army was responsible for one of the stalls, and as the result of an effort to raise money for a special Women Land Workers' Bed over £200 was obtained.

Official List of "Immune" Potatos for 1919 Planting.—The Food Production Department

has issued a list of varieties of Potatos tested and approved as immune from Wart Disease. Copies of the list may be obtained free, on application, from the Department at 72, Victoria Street, S.W. 1. The only early variety in the list is Edzell Blue. The second early varieties include King George, Great Scot and The Ally. Among the maincrop and late sorts are Abundance, Tinwald Perfection, Dominion, The Lochar, and Templar. All the foregoing maincrops and lates are white rounds or ovals; the following are coloured rounds: Kerr's Pink, Rector, Irish Queen, Shamrock, Flourball, Langworthy, Golden Wonder, and Majestic. Many classes of soil "gives Edzell Blue, first early; King George (seed of which should be sprouted), Great Scot, and The Ally, second earlies; and Tinwald Perfection, Kerr's Pink, Majestic, The Abundance types, Lochar, Golden Wonder, and Langworthy, maincrops and lates.

Chrysanthemum Bronze Molly. — The new variety of single Chrysanthemum illustrated in fig. 102 is a sport from Molly Godfrey, which it resembles in all other respects save colour. The ground-colour of the florets is yellow, and this is suffused with carmine, giving the effect of a golden-bronze hue. The variety received

FIG. 102.—CHRYSANTHEMUM BRONZE MOLLY, A GOLDEN BRONZE SPORT FROM MOLLY GODFREY (R.H.S. Award of Merit, December 7, 1918.)

of the varieties tested at Ormskirk and included in this list are new, and difficult to obtain. Therefore the more important varieties known to be on the market in quantity are indicated in the official list by black type. Many of the varieties, moreover, are practically synonymous, and this is also pointed out in the list, where details are available that will enable the grower to select according to his requirements and to identify different varieties by the shape, colour, eye, haulm, flower, etc. A short selection of varieties recommended for planting "on most the Royal Horticultural Society's Award of Merit on the 3rd inst., when exhibited by Messrs. W. J. GODFREY AND SON.

Fire at a Nursery. A fire which occurred at Messrs. PERRY'S Hardy Plant Farm at Enfield about ten days ago did a great deal of damage. The potting sheds, cart sheds and stables were completely gutted, and a valuable horse was killed. In addition large numbers of Liliums, Trilliums and other plants were destroyed. With the exception of the plants the property was insured.

Land Settlement.—The Committee appointed last March by the Minister of Reconstruction, under the Chairmanship of Mr. LESLIE SCOTT, K.C., "to consider the steps and conditions necessary to attract to employment on the land all returning soldiers and sailors who may wish to take up country life, and particularly to induce them to do so in sufficient numbers to secure the maximum output from the land," has just issued its report. We think the Committee is wise in recommending certain measures that will secure better social conditions and introduce added interest to life in the country, such as the establishment of halls, women's institutes, recreation grounds, and better arrangements for passenger transport to neighbouring towns and villages, and, on the economic side, the provision of good gardens and allotments, common pasture, electric supply, and the general encouragement of rural industries. The Committee recommends the immediate appointment of an Executive Committee composed of representatives of the three War Departments, the Board of Agriculture, the Ministry of Pensions, the Ministry of Labour, and also of the chief voluntary organisations interested in the subject, to disseminate the necessary information, to ascertain who want to take up life on the land, and to make arrangements for the placing of the men, and, where they are inexperienced, for their training. With regard to housing, the Committee urges that the provision of a sufficient number of good houses with gardens is absolutely essential; that the responsibility of finding the necessary capital should be assumed by the State, and that the county councils should be made responsible for providing sufficient houses for ex-soldiers and sailors. It is recognised that simple, cheap, and expeditious machinery is needed for the acquisition of the land, and suggest that the county councils should be the acquiring authority with powers to devise to the parish council. The Committee expresses its opinion in favour of the system of agricultural credit now in course of introduction by the Agricultural Organisation Society.

News from Belgium. We have received from Monsieur LOUIS GENTIL, the curator of the Jardin Botanique de l'Etat at Brussels, a letter containing news of Belgian horticulture, from which we give the following extracts: "England has been marvellous; without England and America we should all have died of starvation here. I was not very stout before, but I have lost 23 lbs. in the last four years. The *Tribune Horticole* decided to hibernate during the German occupation, but we shall start it again when we can; just now it is impossible. Belgian horticulture has lost many of its prominent members among others MM. JULES HYE DE CROM, EDGAR WALTET (the Orchid grower, one of the promoters of the Ghent Quinquennial Exhibitions), FIRMIN DE SMET, and FRED. BURVENICH, père. M. JOSEPH DE HEMPTINNE was condemned to death by the Germans, but was pardoned and sent to prison in Germany. Messieurs A. CUYPERS, TOEFFART, and WYTTENDAELE were deported to Germany. M. JULES DE COCK has been living in France, his two sons, LUCIEN and ANDRÉ, keeping the nursery going. In winter they heated the houses with fires fed by Laurel heads! In Brussels, two notable nurserymen, Monsieur STEEMAN and Monsieur VAN DIEVOET, have died. The last month, November, was the most terrible of the whole war for destruction by bombardments. Thousands of glasshouses were destroyed or rendered useless. On the last day of the German occupation of Ghent, M. FRANÇOIS SPAE'S splendid nursery at Melle was destroyed, and the same thing happened to M. F. PAUWEL'S at Meirelbeke. Nearly all the glass was broken, and the Orchids buried beneath the glass, with the temperature at 6° below zero. M. PYNAERT'S nursery at La Pinte also suffered. M. ARTHUR DE SMET has worked splendidly. He is the president of the Nurserymen's Association, and he and Monsieur CALLIER (the presi-

dent of the Royal Horticultural and Agricultural Society) have saved horticulture from complete destruction. Their work throughout the occupation would fill a book. In Brussels itself horticulture has done pretty well—florists and nurserymen have done good business, and vegetable and fruit growers have made small fortunes! The Orchid growers have thrown away all but their rare specimens, but M. LAMBEAU'S collection is nearly all saved, and so is M. PEETERS'. We shall start our monthly meetings here and at Ghent as soon as possible. Here are specimens of a few prices during the occupation: An egg, 2s.; 2 lbs. butter, 40 francs; a choice Apple, 5 to 8 francs; 2 lbs. Pears, 10-12 francs; 1 Pear, 2-4 francs; 2 lbs. meat, 20-25 francs; 2 lbs fat, 35-40 francs; 2 lbs. grain to make flour, 12 francs; 2 lbs. Grapes, 10-12 francs, against 3d in September, 1914; 1 box of matches, 2½d., against 20 boxes for 1d in September, 1914. The botanical garden has suffered greatly—seven houses had to be emptied, as there was no coal wherewith to heat them, and a lot of rare plants have been lost. I could go on writing indefinitely, but must conclude, before I weary you, with 'Three cheers for England and liberty!'" *Louis Gentil.*

CONFESSIONS OF A NOVICE.

THE character in fiction which most holds my regard and affection is the French curé—or is it abbé—of *Les Misérables*, who entertains with perfect hospitality the thief of his most cherished silver spoons. I should like to think that I should be capable of similar magnanimity toward him who stole my Apples. When all other fruit trees of the neighbourhood failed mine bore wonderful crops. Fearful lest the wasps should spoil them, I bagged the fruits. This was their and my undoing. For the Ministry of Food having offered a price for Blackberries, the unoccupied land bordering on my garden was invaded by all manner of pickers. Among them were some who knew only too well that Apples improve Blackberry pie, and idealists seeking always for the best, and doubtless supposing that the bags indicated that the Apples were ready packed for transport—they robbed me as I had robbed the wasps. If I were to complain it would be of the unsportsmanlike way in which they did things by halves, for half the fruit was carried away one night, and whilst I rejoiced at the moderation of these nocturnal visitors they returned and carried away the remainder. I must confess that the police were very sympathetic when I informed them of my loss. They gave me to understand that it was a bad fruit year, that Apples were in great demand, and that they would probably be controlled. Thus the forethought which, thanks to the timely advice for which this journal is so invaluable, had led me to spray and thereby save my fruit was not wholly unavailing, for someone reaped where I had sown, and though the fruit was unripe, the act of stealing supplied no doubt the sweetness which the green Apples lacked. Otherwise the history of this garden has been uneventful: the Celery has as usual developed spot, and the Cabbages are as clubbable as even Dr. Johnson could desire; my transplanted Onions, obtained from heavy land, died in my light soil—they bowed down and died during the cold and drought of early spring; last, and heaviest sorrow of all, the white pig, which never seemed to take kindly to this life, and carried out its destiny of unceasing food consumption in a distrait yet super-hungry manner, has proved to be tubercular, and hence as bacon can never repay me for all the care I lavished on him as pig.

Who can say after this list of events that a garden does not add incident and adventure to life. Those of my friends who during the war "looked on tempests and were never shaken" from their conviction that a gravel path is meant to be rolled, and a lawn to be mown, and herbaceous plants to be staked, and who allowed no vegetable to invade bed or border will have a poor time now. For their gardens are perfect, and theirs is the "dulness of complete felicity"; whereas my garden is all to make; all my mistakes are dead, and it will rise by stepping stones of those dead plants to higher things. The lawn, when the rest of the Savoys have hearted, will be sown with grass from which all Clover is excluded; none but the best perennials will find place in my borders, and those friends of mine will learn presently that patriotism pays—though whom, I will leave to the sympathetic reader to decide.

The strangest thing that I have seen in a garden for many a day is the behaviour this year of an Oak. Last year this tree, which is about 12 or 15 years old, retained its leaves until early spring, and stood in striking contrast with a companion Oak which was leafless before the turn of the year. This year I have been looking for a recurrence of the phenomenon, but to my surprise find that both trees have already lost their leaves. Now deciduousness is, I presume, an acquired habit, and our broad-leaved trees should, if they were born and bred, they and their forbears, in an equable climate, remain leafy all the year. If this is so, it looks as though this tree of mine, which last year kept its leaves, has not gradually but suddenly obeyed the behest of inherited habit or instinct, and given up all at once the ancient practice of keeping its leaves in favour of that of discarding them. The remarkable feature of the phenomenon lies in the suddenness of the change of habit, and is comparable with that said to be exhibited by certain deciduous trees when transported to regions of equable climate; from the first year, so it is said, these trees forsake their habit of deciduousness and become evergreen. *A. N.*

ON INCREASED FOOD PRODUCTION.

PREPARATION FOR ROOT CROPS.

THE preparation of the soil for root crops is more important than many gardeners realise. Early preparation is most advisable if good crops are to be obtained, since these crops need well-worked soil that is free from lumps. It will not be possible to prepare the ground before Christmas, but the work should be done as soon as possible afterwards, in order to allow plenty of time for the soil to settle.

Deep trenching is by far the most successful method of culture when shapely roots are required, and although it seems curious to advise trenching when labour is scarce, anything which tends to increased production should be most carefully considered. Demobilisation will ease the labour problem, and it is to be hoped that the Army will be disbanded sufficiently soon for labour to be available for trenching. In trenching ground for root crops very little manure should be dug into the soil, since it tends to make the roots fork; the little that is used should be buried two feet deep, for the roots will grow down and find the food where they require it. For both sandy and strong soils use pig and cow manures, and horse manure for heavy land. In addition to these natural manures, concentrated fertilisers, such as flue dust, wood ash, calcium cyanamide, and bone meal might be freely dug in during the trenching of the ground.

Provided that the work is done soon, there is no reason why the soil should not derive great benefit from being ridged and left as rough as possible. It is only when ridging is done at the end of February that no advantage is seen, and it is surprising how often one sees land ridged up too late for the frost to pulverise it successfully. Most of the severe weather comes after Christmas, so that if the work is carried out immediately the surface soil should become a fine tilth for the sowing of root crops after a couple of months of exposure.

The mistake that many gardeners make is to sow root crops too soon. Personally, I do not favour the sowing of Parsnips or Carrots before early in March, and Salsafy or Beetroot should certainly not be sown before April. The ground after ridging should be first levelled and then broken to obtain a fine surface. More rapid germination will take place if the drills are drawn early in the morning of a sunny day, and the seed sown in the drills after they have been warmed all day by the sunshine. Little points of this kind are more important than they seem, and result in greater success being obtained. *E. T. Ellis.*

HOME CORRESPONDENCE.

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

Hydrangeas and Fuchsias in Anglesea.—I recently spent a short holiday in Anglesea, and visited the place of my boyhood after an absence of thirty years. During the time of my absence I have often thought of the beautiful Hydrangeas and Fuchsias which grew there, and at times wondered whether the plants were really little things that appeared big to a small boy's mind. But not so. The Hydrangeas are still there, huge bushes, like Rhododendrons, covered with their trusses of pink and blue flowers. Plants with blue inflorescences predominate under trees or in woods, though these are not very plentiful on the island. I have never seen blue Hydrangeas growing naturally anywhere else. Fuchsias are also very fine; the plants make bushes 10 to 15 feet high, and are red with their little bells. Just before entering Holyhead station numbers of Fuchsias may be seen growing amongst the rocks, also amongst the rocks near the breakwater. The islanders do not appear to be very keen gardeners; one sees practically nothing in their gardens but Potatos. *Thos. E. Furnell, Quakers' Hall Nursery, Sevenoaks.*

Citrus trifoliata (syn. Aegle sepiaria) (see p. 157).—Citrus trifoliata has proved quite hardy in East Lothian, and, this season, I raised a batch of plants from home-saved seeds. I propose to use these plants for a hedge, which should be a very interesting one if the experiment is successful. Mr. Lynch refers to the crossing of C. trifoliata with the common Orange, and states that a hybrid known as the Citrange has been raised in France with the object of producing an Orange that would flourish in a climate that is too cold for the common Orange. I have no knowledge of this French hybrid, but it may interest Mr. Lynch to know that a British nurseryman is offering four new hardy Orange hybrids that have come from the United States, where they have succeeded in crossing C. trifoliata with some of the best kinds of Sweet Orange. I hope to have the opportunity of trying these hybrids next summer, although I doubt their value in our Scottish climate. Nevertheless, when one remembers that C. trifoliata is very late in starting into growth in the spring, that it ripens its fruit early, and becomes dormant fairly early in the fall of the year, one can imagine that if these characters are found in its hybrids, coupled with the sweet flesh of the edible varieties, it may then be possible to produce good Oranges out-of-doors in this country. At the International Conference on Hybridisation, held in London in 1899, under the auspices of the Royal Horticultural Society, Mr Herbert J. Webber, then in charge of the Plant Breeding Laboratory of the United States Department of Agriculture and Hybridisation, gave a most valuable paper upon the work of that department. The subject of Orange hybridisation constituted a large part of his lecture, and much interesting information was given in regard to C. trifoliata and hybrids therefrom. The difficulties of crossing C. trifoliata are dealt with, and various Citrus hybrids from it are described. These are raised from pollen of the Sweet Orange, the Tangerine (C. nobilis), and several others. A verbatim report of the lecture, with photographic illustrations of the various hybrids, will be found in the *Journal of the Royal Horti-*

cultural Society, April, 1900, Vol. XXIV. The object of crossing hardy Oranges was to secure a hardy race of Citrus fruits which would withstand the severe frosts that occur occasionally and cause serious damage in the Orange regions of the United States. *George M. Taylor, Portobello, Midlothian.*

The Loss of the Clematis in Gardens see pp. 165, 210, 220.—Messrs. Bunyard and Co., in referring to my article, wrote as if this serious problem did not exist, though there are many gardens in their own county that show it, as in Sussex, and also throughout our isles generally. Mr. E. A. Bunyard, who has given me the pleasure of a visit here, seemed pleased at what he saw, but may not have made a note of the Japanese Clematis, in good health, growing in the same place for over a quarter of a century. This was attained without any gain of soil or climate that other sites do not own, and every word said in my my article in your columns was duly weighed and based on actual trials for twenty years here. Messrs. Bunyard do not fix upon any word of mine as wrong, but wish it "withdrawn." Withdraw the result of many years' trials at my own cost, and now shown at Lyons as well as here? It cannot be done. As well ask Mr. Bean to withdraw his statements in *Trees and Shrubs* as to the bad results of grafting in various trees and shrubs. Of fragrant shrubs, many fine varieties of the Lilac have been destroyed for years by grafting on the Privet, an evil-smelling shrub in flower, the stock killing the Lilac and then taking its place in many suburban and town gardens. If anyone wishes to see an instance of this, let him go some summer evening to the Zoological Gardens, in Regent's Park, and if he escapes a headache he may know better what to do than plant Lilacs on Privet. Now, happily, growers both in Europe and America offer Lilacs on their natural roots, the only way to secure their health and endurance. Here, trees of forms of the Locust, Robinia, have been raised out for many years, and may be cited as to the benefit of grafting on trees. Struck by the beauty of the small-leaved form as a specimen, I planted standards in various aspects, and visitors rarely noticed the trees not owned on their age and vendure. After some years they began to look sickly, and one by one died, killed by the stock of the wild tree on which they were grafted. After much inquiry, I at last obtained a few small plants on their own roots; these grew slowly, but are now beautiful bushes, though planted in poor soil and an exposed aspect; these trees are as hardy and enduring as the type. The same thing happened with other varieties grafted on the wild form, in spite of much labour in removing vigorous suckers. Here, then, is another proof that trees of great garden value are lost by grafting. Few nurser men like to care for such trials, as many find to their cost, as it can do no good to the trade to send out trees which perish sooner or later. *W. Robinson, Gravetye, Sussex.*

SOCIETIES.

UNITED HORTICULTURAL BENEFIT AND PROVIDENT.

DECEMBER 3.—The monthly meeting of this Society was held in the R.H.S. Hall on Monday, the 9th inst., Mr. Chas. H. Curtis presiding.

Two new members were elected. One member was allowed to withdraw interest amounting to £2 10s. 10d.; two members over the age of 70 years withdrew £55 18s. from their deposit accounts, and one member withdrew £22 18s. 10d. from his lapsed account.

The Army forms of the late Privates W. C. Croxford, E. Witten, E. Evesham, A. Gardiner, and R. W. Lane were received, and the sum of £18 0s. 1d. was passed for payment to their respective nominees. The death certificate was received of an old and esteemed member who had received over £240 in sick pay and still had a balance of nearly £100, which was passed for payment to his nominee. The sick pay for the month on the ordinary account amounted to £93 15s. 11d., State section to £54 6s. 8d., and maternity claims £4 10s. The trustees were empowered to invest a further sum of £500 in War Bonds. Mr. W. H. Divers was co-opted a member of the committee in the place of the late Mr. E. J. Allard.

CROPS AND STOCK ON THE HOME FARM.

THE 1919 ONION CROP.

ALTHOUGH the year 1918 was not favourable to the Onion crop in this district, mainly owing to drought during April, May and June, when only 2½ inches of rain fell, the result was better than was at one time anticipated. Wireworm was a source of trouble in newly ploughed grass land. During September, when 7½ inches of rain fell, the ripening of the bulbs was retarded, consequently among late planted bulbs there were many thick-necked specimens.

Those who intend to grow Onions in 1919 should prepare the soil early, so that if seed is to be sown in the open it may be got in early in March. No doubt the planting-out method has its advantages, but where labour is scarce I strongly advise outdoor sowing. When the plants in the boxes are ready to put out no delay should occur, as the seedlings become stunted and overgrown quickly and do not readily recover. The entire success is regulated by the rate at which growing proceeds.

Now is the time to apply twenty to thirty tons per acre of farmyard manure, and deeply plough it in. On the newly ploughed surface apply to the acre of lime-rubble slag, working it in by cross-ploughing, and surface as rough as possible to be pulverised by rain and frost. Under these conditions the soil is obtained early in the year and is not hindered. A crop giving from three to five tons per acre, at the Government prices of £24 and £30 per ton, cannot fail to be satisfactory. The ground for Onions avoid planting on a piece because of the constant [illegible] which Charlock grows freely in the seedling stage, as this pestiferous weed grows during the whole of the season, even as late as September, and robs the ripening bulbs of [illegible].

CULTIVATING ORCHARDS.

A [illegible] through what are known as [illegible] counties, or in districts [illegible] for market, will prove [illegible] the management of [illegible] Apple, Pear, and Damson, and [illegible] In regard to Pears, I am at a loss [illegible] more stocking Pears of attitude, for [illegible] As a rule this variety [illegible] and the fruits [illegible]

[illegible] is in the lack of [illegible] trees from moss and [illegible] the total absence of manuring.

[illegible] trees are dosed the [illegible] and plants are [illegible] also to take care [illegible] are planted. Grass [illegible] surface soil, right up [illegible]

[illegible] should be severely [illegible] weekly growth which [illegible] order to admit sun and [illegible] of the trees and induce new [illegible] to develop.

When pruning is finished the trees should be [illegible] with winter wash to rid the branches of [illegible].

I [illegible] in spraying the trees with [illegible] April, but as farmers [illegible] than too busy with spring sowing, [illegible] the trees do not always have the attention [illegible] I recommend a winter [illegible] will secure the same purpose, if the [illegible] given with the various proprietary [illegible] are properly carried out. When large trees show signs of waning vigour, and where it is not convenient to apply manures, copious supplies of liquid manure given any time during the winter or early spring months will provide an easy and effective method of stimulating growth and inducing fruitfulness. *E. Molyneux, Stanmore Farm, Bishop's Waltham.*

MUSTARD FOR SEED.

In consequence of the action taken by Agricultural Executive Committees, the acreage in England and Wales devoted to this crop has been reduced from 51,907 acres in 1916 to 9,999 acres in 1918. The crop is a profitable one to farmers, and it is also important to maintain the export trade, which is of considerable value. It has been decided therefore that an area of 20,000 acres should be allowed for the harvest of 1919, but that half of this area should be grown on land ploughed out of grass for the purpose. Mustard for seed is a very suitable first crop to be grown on newly ploughed grassland, and it is believed that many farmers would be prepared to break up grassland if they were allowed to use the land for growing Mustard for seed. The Board of Agriculture has made a general order prohibiting the growth of Mustard for seed except under the authority of a licence granted by Agricultural Executive Committees.

TRADE NOTES.

CHAMBER OF HORTICULTURE PROGRAMME.

THE Organising Committee of the Chamber of Horticulture has before it many suggestions for work, and proposes immediately to take steps to deal with the important questions of statistics, mechanical cultivators, imports and exports, and the treatment of diseases. These items, by the general consensus of opinion, call for prompt measures, and the Committee will put forward definite details in the near future.

Further subjects claiming the attention of the Chamber include soil sterilization, treatment of seeds (electrically and otherwise), fuel consumption, glass house construction, and cold storage, research work, and the serious question of transport difficulties, are down on the programme of the Committee for prompt treatment.

The Chamber is already in request by Government Departments for the purpose of advisory work, and, from the trade point of view, one of the problems to be met is that of competition among official bodies and traders. The setting up of special committees for arbitration and conciliation, the establishment of labour conferences, and the drawing up of a broad minded scheme for dealing with after war conditions, should tend to the establishment of closer relations between the various sections of the trade, which may be said to be the first and all-important aim for which the Chamber of Horticulture has been inaugurated.

NEW RETAIL PRICES FOR POTATOS.

THE Food Controller has decided, so far as is consistent with the undertakings given to growers, to relax the strictness of the Government control of Potatos. In order to give effect to this decision he will issue immediately an Order, called the Potato (Consolidation) Order (No. 2), 1918, which will so modify the existing Potato distribution scheme as to give greater freedom and latitude on sales by the growers and any dealings by wholesalers and retailers.

The following are the principal modifications:—

Growers will no longer require a licence to sell Potatos to retailers or consumers within their zone. The price at which they sell will, however, be the same, whoever is the purchaser, that is to say, it will be the grower's price fixed for the district, except that the grower may sell lots up to 1 cwt. direct to consumers at any price up to 1d. per lb.

The flat price for Potatos to retailers and consumers will be abolished, and wholesale dealers and retail dealers will sell on margins in the same way as last year. The wholesale dealers' commission will be averaged over four weekly periods, the first period beginning on December 16. During any such period the dealer's average profits must not exceed 4s. per ton for sales to other than wholesale dealers, and 10s. per ton for sales to retail dealers and consumers. The Potatos must in no case pass through the hands of more than two wholesale dealers, and any wholesale dealer who obtains Potatos through his Potato Control Committee may not resell them to another wholesale dealer.

The maximum retail price, as shown in the table printed below, will vary with the retailer's buying price, which for this purpose is reckoned as the sum of (a) the actual price paid for the Potatos by the retailer, excluding any sum paid as deposit on bags; and (b) any sum borne by the retail dealer in having Potatos carted to his shop. If he carts the Potatos in his own van he may include a reason

able sum, not exceeding 5s per ton, for this service.

The movement of ware Potatos from surplus to deficit zones will be controlled by the Ministry of Food as at present, but pig Potatos will be allowed to move freely from one zone to another. A grower may cart his ware Potatos to any place in any other zone within five miles of his farm; and ware Potatos, grown in Essex, Middlesex, Hertfordshire, and Bedford may be sent into London unless they are loaded at railway stations in other zones.

Wholesale dealers in deficit zones, who cannot obtain sufficient supplies of Potatos from within their own zone, will indent on their Potato Control Committee or Market Committee for supplies from other zones.

COUNTIES AFFECTED WITH BLIGHT.

In view of the abnormal development of blight in the Eastern counties and other special circumstances since growers' prices were fixed, these prices have been revised for the counties chiefly affected, and will be as follows during December for the King Edward and Langworthy group:—

Best land (Silt, Warp, Limestone, and Highland Clay).—Lincoln, Norfolk, Cambridge and Hunts, Soke of Peterborough, and Yorkshire, £7 in each case.

Other Land.—£6 5s. in Cambridge and Hunts; £6 10s. in the other counties named.

The prices for other varieties of Potatos will be 10s. a ton less than the above. The price for all varieties will be increased after the end of December by the amounts indicated in the Commission's report. The riddle for ware Potatos grown in Nottinghamshire will be reduced from 1½in. to 1¼in.

The following is the scale of maximum retail prices referred to above:—

Retailer's buying price per cwt. for Potatos delivered to his shop.	Highest authorised retail selling price over the counter. Rate per cwt. for lots of 1 cwt. or more.	Rate per stone for ½-stone lots or lots of 14 lb. or 7 lb. and more, but less than 1 cwt.	Rate per ½-stone lot or lot of 7 lb. and more, but less than 14 lb.	Rate per lb. for lots of less than 7 lb.
s. d.	s. d.	s. d.	s. d.	
Any price up to 6 3	7 2	1 0	0 6	
s. d.	s. d.			
Between 6 3 and 6 7	7 6	1 0½	} 0 6½	1d.
,, 6 7 ,, 6 11	7 10	1 1		
,, 6 11 ,, 7 2	8 1	1 1½	} 0 7	
,, 7 2 ,, 7 6	8 5	1 2		
,, 7 6 ,, 7 10	8 9	1 2½	} 0 7½	
,, 7 10 ,, 8 1	9 0	1 3		
,, 8 1 ,, 8 5	9 4	1 3½	} 0 8	1½d.
,, 8 5 ,, 8 8	9 7	1 4		
,, 8 8 ,, 9 2	9 11	1 4½	} 0 8½	
,, 9 0 ,, 9 4	10 3	1 5		
,, 9 4 ,, 9 8	10 7	1 5½	} 0 9	
,, 9 8 ,, 10 0	10 11	1 6		
,, 10 0 ,, 10 3	11 2	1 6½	} 0 9½	1½d.
,, 10 3 ,, 10 7	11 6	1 7		
,, 10 7 ,, 10 11	11 10	1 7½	} 0 10	
,, 10 11 ,, 11 2	12 1	1 8		
,, 11 2 ,, 11 6	12 5	1 8½	} 0 10½	
,, 11 6	—	12 9	1 9	

In cases where Potatos are sold with bags included, 6d. per cwt. must be deducted from the actual buying price in order to arrive at the buying price for the purposes of the schedule. For example, if Potatos are bought at the rate of 9s. 8d. per cwt., bags included, the selling price is determined by line 11 of the schedule, and not line 12.

SALES OF SEED POTATOS.

THE Seed Potatos Order (1918) which came into force on Monday last, requires a written declaration to be furnished by the vendor to the buyer on the sale of Potatos as or for "seed." The declaration must state the class and variety and dressing of the Potatos sold. In cases where seed Potatos are sold from crops immune from wart disease, they must be certified as reasonably free from rogues by the Board of Agriculture, or by the Board of Agriculture for Scotland. The declaration must also state the serial number of the relative certificate.

For the purpose of this Order the classes of Potatos sold as or for "seed" are:—

"Class I. (Scotch)," which includes only Potatos grown in Scotland.

"Class I. (Irish)," which includes only Potatos grown in Ireland.

"Class II. (once grown)," which includes only Potatos grown in England or Wales in respect of which documentary evidence can be produced showing that they were grown in the year 1918 from seed grown in Scotland or Ireland in the year 1917.

"Class III.," which includes all other Potatos.

The Order does not apply to Potatos sold in Ireland for planting in Ireland. It does not prescribe maximum prices to be paid to the grower, rates of commission on sales by merchants or retailers, or the size of riddle to be used in dressing Potatos for sale as or for "seed."

IMPORTATION OF JAPANESE LILY BULBS.

As the result of efforts commenced by the British Florists' Federation, directly after the signing of the armistice, the Board of Trade Department of Import Restriction granted permission for the importation of 10,000 cases of Lily bulbs from Japan on Monday, the 16th inst., and on the 17th inst. the Committee drew up a pro-rata allocation to those importers who received licences in 1916. This allocation was accepted by the Department of Import Restriction the same afternoon, and the importers were notified during the evening.

Obituary.

T. W. Pritchard. We regret to record the death of Mr. Thomas William Pritchard, for several years gardener to M. Hyslop Maxwell, Esq., The Grove, Dumfries. Mr. Pritchard, who was a son of the late Mr. Pritchard, gardener to the late Sir Emilius Laurie, Maxwelton House, gained experience at several good gardens, and was an able, all-round cultivator. He took a considerable interest in all horticultural movements, and frequently acted as a judge at local shows. He was of much assistance to allotment holders in the neighbourhood of Dumfries, by giving advice. Mr. Pritchard had been in poor health for a considerable time, and sanatorium and other treatment failed to restore his health, and he had to resign his appointment at The Grove a few months ago. He is survived by a widow and three young children. The funeral took place at Irongray Churchyard on the 12th inst.

THE WEATHER.

THE WEATHER IN SCOTLAND

November was a month of fog and rime, with a meagre amount of sunshine and a low rainfall. On thirteen nights the minimum thermometer in the screen fell below the freezing point, and read as low as 20° on the 23rd. Rain fell on thirteen days, yielding a total of 1·69 inch, the greatest fall of 0·61 inch being on the 1st. Of sunshine 54·7 hours were recorded, being an average of 1·8 hour per day, and a percentage of 22. There were thirteen sunless days. The mean barometric pressure was 29·93 inches, varying from a highest of 30·50 inches on the 12th to a lowest of 29·10 inches on the 2nd. The mean temperature for the month was 38·5°, with a mean range of 15° and an absolute range of 33°. On the 2nd, 10th, 3rd 16th, the highest maximum of 53° was recorded, and on the 23rd the lowest minimum of 20°, while the lowest maximum of 34° and the highest minimum of 42° were on the 22nd and 2nd respectively. The mean maximum temperature was 46°, and the mean minimum 31°. On the grass the mean minimum was 26°, with a lowest of 15° on the 23rd. There were twenty-four nights of ground frost. At 1 foot deep the soil temperature fell from 47° to 37°. For the month the air had the high relative humidity of 90 per cent. The prevailing winds were from the south-west. *James Mulloch, Training College Gardens, Kirkton of Mains, near Dundee.*

DEBATING SOCIETIES.

READING AND DISTRICT GARDENERS'.—"The Apple: Pruning and General Cultivation," was the subject arranged for the discussion at the meeting of the above Association on Monday, the 2nd inst., held in the Reception Club Room, Abbey Hall. Mr. H. C. Loader presided. Mr. T. J. Tubb (Bear Wood Gardens) opened the discussion on his first attendance to the meetings after receiving his discharge from the Army. Mr. Tubb explained his mode of summer and winter pruning of various types of trees, root pruning, and general management, such as the thinning, protecting and the picking of the fruit, watering and mulching. The lecturer staged a collection of 17 dishes of fruits of Apples, all in good condition and of excellent colour. Among the most noticeable were Cox's Orange Pippin, Golden Noble, Adams's Pearmain, Sandringham, Edward VII., Normandy Pippin, and Gascoyne Scarlet.

ANSWERS TO CORRESPONDENTS.

COMMERCIAL HORTICULTURE IN ENGLAND: *E. A. B.* The prospects of obtaining employment as manager of a commercial horticultural establishment in England would depend largely upon your knowledge of the trade in this country. If a knowledge of cultural and business methods in the United States can be added to experience here, there should be no great difficulty in obtaining employment. It is generally anticipated that horticulture will advance in the near future, and some people go so far as to predict a "boom." Your best plan will be to advertise your requirements and state what experience you possess.

CORRESPONDENCE SCHOOL OF HORTICULTURE: *J. C. R.* We have no knowledge of the Correspondence School referred to in your letter. Every young man should take advantage of any opportunity for improving his general education and acquiring a knowledge of those sciences which are directly concerned with the practice of horticulture. A list of books suitable for study, if you have a horticultural examination in view, can be obtained from the Royal Horticultural Society, Vincent Square, Westminster.

FROSTING SHRUBS: *G. H. S.* The following is a simple method of "frosting" shrubs: Put a sufficient quantity of thin, clear starch into a pail, into which dip the evergreen branches; then apply "Jack Frost" powder while the foliage is wet, and stand the branches in a dry, warm place. The "frosting" quickly dries, and the branches are then ready for use. The powder can be obtained at most fancy or toy shops.

LOGANBERRY NOT SATISFACTORY: *Sherwood.* You are not alone in your experience of the fruits of the Loganberry being defective, for it is a common occurrence for them to be infested with grubs, causing the flesh to be hard and unpalatable. The Himalaya Berry is one of the best of the numerous fruiting Rubi, and you might try this Bramble as a substitute for the Loganberry.

MANGOLD WURZEL: *C. H. C.* The word Mangold is certainly of Teutonic origin, but it would be impossible, even were it desirable, to expunge all such words from the English language. The spelling "Mangel" is simply a corruption of "Mangold," due to careless pronunciation. Certainly the further corruption of the spelling to "Mangle" would lead to some strange confusions, as you suggest.

MARKET GRADES OF TOMATOS: *C. P. B.* Tomatos are sold in the market in baskets known as strikes; each strike holds 12 lbs. A tally is five dozen. The highest grade Tomatos are packed with pink and white paper; for the smaller, "best" samples, pink paper is used; blue paper for ordinary and seconds. In usual practice there are these four grades.

NAMES OF PLANTS: *H. E. S.* Veronica Andersonii: one of the handsome garden forms raised on the Continent.—*G. E.* Fruits of Datura Stramonium—the Thorn Apple.—*W. M. M. D.* 1, Cypripedium insigne; 2, C. Boxallii, 3 and 4, varieties of Maxillaria porphyrostele; 5 and 6, forms of Calanthe Veitchii.—*G. Figgis.* Vaccinium corymbosum.—*T. H.* 1, Santolina incana; 2, Gypsophila prostrata; 3, Helianthemum sp.; 4, Clematis apiifolia; 5, Juniperus chinensis var.; 6, Azara microphylla; 7, Escallonia macrantha; 8, Jasminum revolutum; 9, Clematis paniculata; 10, Skimmia japonica; 11, Cassinia fulvida; 12, Ceanothus americanus var.

RHUBARB: *Sherwood.* The Sutton variety is one of the finest of all Rhubarbs. We find it gives stalks as early as the majority of varieties, and is, in our opinion, superior to Victoria.

THE ASPARAGUS PEA: *J. C.* Seeds of the Asparagus Pea (Lotus Tetragonolobus) are probably not obtainable in this country at the present time. The demand for the plant is very small in this country and it is not, we believe, ever grown here for seed purposes.

Communications Received.—M. S. A.—J. A. P.—S. M.—J. M.—R. E. N.—J. F.—de B. C.—G. T.—O. H. P.—F. S.—Sir J. C.—E. S.—J. T. T.—W. E.—E. A. B.—W. B. H.

THE

Gardeners' Chronicle

No. 1670.—SATURDAY, DECEMBER 28, 1918.

CONTENTS.

ILLUSTRATIONS.

NOTES FROM KEW.—XII.*

At this peace-time Christmas one should write about Mistletoe and crackers with mottos, and laurels for wreaths for the victorious. But the editorial order is for notes about some of the nice things in flowers at Christmas, berried shrubs and such-like garden decorations. There are not many this year, at any rate, not at Kew. Hollies, Pyracantha and Pernettya are nearly stripped of their berries already, Kew being a bird sanctuary, and the birds being unreasonably fructivorous. There would be nice Roses were it not for the rain and semi-darkness experienced this sloppy month. Soft weather has brought into flower the Witch Hazels and Rhododendron Nobleanum and R. dahuricum. Christmas Roses are in bloom, too, and Iris stylosa. The sun must shine now and then if we are to have flowers of any kind. In the houses there are fewer plants in bloom than there ought to be. Fog has withered up some things, and the absence of sunlight has caused many flowers to rot in the bud. Gardening is a precarious occupation. It is war most of the time.

The most striking of the comparatively few Orchids in flower is Schomburgkia splendida, a well-named species which flowered for the first time in December last year. The plant was presented to Kew in 1900 by Mr. Elwes, with whom it had failed to flower. According to Mr. Rolfe, who identified it, specimens were first collected by André on the Rio Dagua in 1876, and later by Lehmann on the Rio Esmita, Colombia. The species is the largest of the dozen or so known, the flower-spikes being 5½ feet high with about a dozen flowers in a cluster at the top, each flower measuring 4 inches across; the sepals and petals are strap-shaped, very wavy, and coloured glossy brown-purple; the lip and column are bright rose-purple, except for a small white patch on the front lobe; pedicels 4 inches long, twisted, and white. Like S. crispa, S. undulata, S. marginata, and the well-known S. Tibicinis, the plant is straggling and awkward in habit, and the scape is too long for the ordinary plant house; but seen at close quarters the flowers are strikingly handsome, though on the dusky side. The genius might very well be combined with Laelia, L. superbiens, for example, being as like to the long, loose-growing Schomburgkias as one Pea is to another.

The white variety of Cattleya Maggie Raphael is a superb hybrid. It blooms in mid-winter, and its large, shapely, white flowers, with red-stained lip, are greatly admired. The plant is good-natured, too, growing freely and flowering strongly, the Kew example having four good blooms on one scape. I may take this opportunity to record the great gift of Cattleyas and other Orchids made to Kew by Sir George Holford in 1913. A house had to be built for their accommodation, and the plants generally have maintained the reputation of their former home, the famous garden at Tetbury, by growing and flowering so satisfactorily that there has always been an attractive display, particularly of Cattleyas, Laelias and Cymbidiums. If any reader happens to have tropical Orchids, such as Vandes, Aerides, Saccolabiums and Dendrobiums which have outlived their welcome there is room for them at Kew, where they would meet with proper appreciation. The collection has felt the effects of war conditions in respect of such Orchids. Cypripediums are well represented.

The experiment with sponge trimmings as a substitute for peat fibre for Orchids has not proved the success that I anticipated. With the exception of Cypripediums, which appear to revel in sponge, the roots do not like it. I am unable to account for this fact. Possibly if the experiment had been made with seedling Orchids the result would have been better. Plants that had lived in peat for years may not be able to find their requirements in sponge, or it may contain something that most Orchids dislike. There can be little doubt that a mixture of air and water is all the nourishment epiphytic Orchids naturally get. As a rule the plants go wrong when the compost about their roots breaks down and becomes what is known as sour.

Whilst so many good greenhouse plants have been allowed to drop out of cultivation, hard-wooded plants in particular, the Acacias are still in favour. There are few better shrubs than A. platyptera, and its lemon-coloured variety, alata, for decorating a conservatory in mid-winter, and there is not one that surpasses A. Baileyana when grown as a pillar ornament. Its grey-green leaves are always pleasing, and when the long, leafy shoots are laden with elegant racemes of golden yellow-fragrant flowers it is loveliness in excelsis. Grown as a loose shrub and pruned heavily every year after the flowers fade, this Acacia stands out conspicuously among the many species that are represented in the Kew Temperate House. I have seen trusses of the flower-laden shoots of it offered for sale in winter in the London flower shops, and I am told that in the South of France A. Baileyana is supplanting A. dealbata for this purpose. Has the former been tried in South Cornwall? It is said to be at least as hardy as A. dealbata, of which there are good-sized trees in gardens Falmouth way. Here is a list of the most decorative plants in flower in the houses in Christmas week: Acacia leprosa, A. urophylla, A. linearis, A. pulchella, A. Baileyana, A. alata, A. platyptera, A. dealbata; Begonias, socotrana, Gloire de Lorraine, Glory of Cincinnati, Mrs. Peterson, Gloire de Sceaux, and semperflorens, gigantea; Buddleia officinalis, B. asiatica, Centropogon, Lucyanus, Cestrums, Calceolaria Burbidgei, Carnations, Cyclamens, Camellias, Chorizemas, Crowea saligna, Calanthes, Cypripediums, Cattleyas, Daphne odora, Diospyros Kaki (fruits), Eucharis grandiflora, Euphorbia fulgens, Epacris, Eupatoriums, Heeria rosea, Hymenocallis speciosa, Impatiens Sultanii, I. Holstii, I. Oliveri, Ipomœa Briggsii, Jacobinia chrysostephana, Lindenbergia grandiflora, Laelias, Luculia gratissima, L. Pinceana, Orange (flowers and fruits), Peristrophe speciosa, Primula obconica, Poinsettia, Protea pulchella, Richardias, Reinwardtias, Strobilanthes isophyllus, Strelitzia kewensis, Sparmannia africana, and Tibouchina semidecandra. Not an impressive list. May we blame the weather or the Germans, or both, that it is not better?

The two Buddleias mentioned in the list are greenhouse shrubs which bear trusses of small, grey-white, tubular, very fragrant flowers, even small plants in 5-inch pots flowering profusely.

Begonia socotrana, which made its first appearance at Kew in 1881 and has never since lost favour, is represented by a group of well-grown examples now in full flower. The plant is worth growing for its foliage alone: orbicular, peltate, with a recurved, toothed margin, rich green and from 6 inches to 8 inches in diameter, the leaves are of the kind that never fails to arrest attention; and the bright rose-pink flowers, always produced in mid-winter, are a delight unless fog spoils them, as it sometimes does. As the parent of a large family of winter-flowering Begonias, including Gloire de Lorraine and the grand hybrids raised by Mr. John Heal, the best of which are now making a great show in No. 4 greenhouse, the Socotran species has a strong claim to the gardener's affection. It requires a dry rest after flowering till June, when the plants should be shaken out, repotted, and started again in a warm house.

The Gentians deserve to rank even higher than they do in horticulture. There does not appear to be a Gentian specialist, yet there is ample material and interest in the genus to make it worth while. China has lately added several first-rate species, exactly what the alpine gardener wants, as they grow freely, form the right kind of tufts, and are as floriferous as they are charming. The photograph reproduced in fig. 103 was intended to accompany last month's

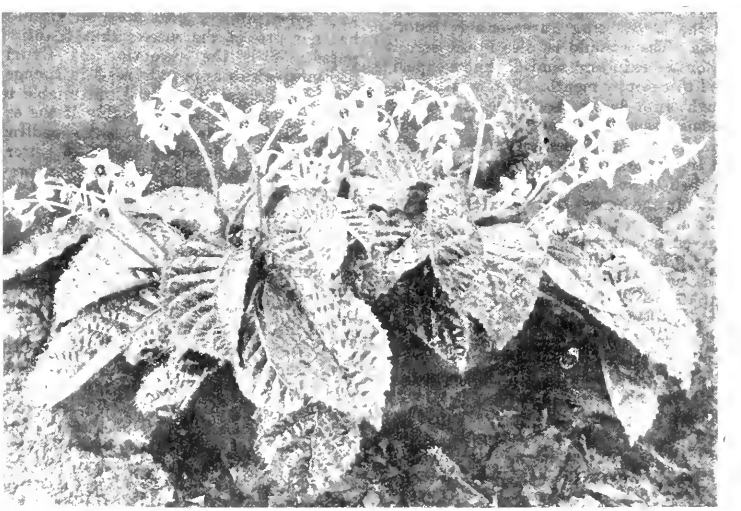
* Previous articles appeared in the issues of January 19, February 9, March 9, April 6, May 18, June 8, July 6, August 10, September 21, November 2, and December 7.

notes. It represents one of the latest introductions from China, and as it was in the Kew Rock Garden on mid November. It is quite hardy, and the flowers, nearly the size of the Gentiana acaulis are a rich, clear blue. I think this must be the same Gentian which Mr. Perry showed on October 12, 1915, and obtained the R.H.S. Award of Merit for, under the name of G. ornata, but the true species of that name is Himalayan, and is paler in colour, as shown in *Bot. Mag.*, t. 3,140; the name of the Chinese species illustrated in fig. 103 is G. sino-ornata. I am not certain whether the plant called G. Veitchii, or Veitchiorum, is the same or a form of it. There can be no doubt, however, as to its worthiness, and in a fairly moist soil, not too much exposed to direct sunshine, it is as happy as the best natured of the older Gentians. G. Freymana, G. Lagodechiana, G. Kurroo, G. Przewalski (a shocking name for a lovely plant) and G. septemfida are others that only need to be seen to inspire the wish to possess. I do not know enough about the latest comer, G. Farreri, but from accounts of it by Mr. Farrer and others it is a champion. Another of Mr. Farrer's finds in Tibet is G. hexaphylla, which, in his delightful book, "On the Eaves of the World," he figures and describes as "one of the most lavishly lovely of its race." The description given in the same book of G. Farreri is worth quoting here. "The vivid and violet gloxy of my own Gentian of the Da Tung, by far the most dazzlingly beautiful I have ever seen, relegating G. verna, G. excisa and G. bavarica to mere dowdiness. The shrill and incandescent azure of G. Farreri's great trumpets, visible a quarter of a mile away in the grass, like stars of burning sky, or the green lights fallen from a rocket." The flowers open in early September on the alpine heights of Da Tung within but a few weeks of final winter. This is surely enough to make us all Gentianites."

Mention should have been made in July of the interesting little hardy Japanese Gesneriad, Conandron ramondioides (fig. 104), which for the last twenty years or so has been grown on the rockery at Kew, where it is as happy as its cousin, Ramondia pyrenaica. There is also an affinity with Streptocarpus suggested by the habit and foliage of the plant, though there is none in the flowers, which in the Conandron are star shaped, ivory white, and about an inch across. A shaded crevice in a rock wall is the best position for the plant, and it likes a peaty, moist soil. Its home is in the mountains of Japan, whence it was introduced by Messrs. Veitch and described by Dr. Masters in *Gard. Chron.* in 1879.

[Photograph by W. Irving

FIG. 103.—GENTIANA SINO-ORNATA IN THE ROCK GARDEN AT KEW IN NOVEMBER.



Photograph by W. Irving

FIG. 104.—CONANDRON RAMONDIOIDES: FLOWERS IVORY WHITE.

Kewites will no doubt be interested to learn that the wages of gardeners, both male and female, are now 24s., plus 23s. war bonus, also that all Kew employees who joined His Majesty's Forces are entitled, on being discharged, to return to their posts in the gardens. W. W.

The Week's Work.

THE KITCHEN GARDEN.

By F. JORDAN, Gardener to Lieut.-Col. SPENCER CLAY, M.P., Ford Manor, Lingfield, Surrey.

Mushrooms.—A steady temperature of 50° to 55° should be maintained in the Mushroom house without the aid of fire heat if possible. This cannot always be done, but in no case should an excessive amount of fire heat be used. A dry atmosphere must be guarded against by damping the floors and walls. Continue to collect manure for the making of new beds, and place it in a dry, open shed where it can be turned frequently.

Carrots.—A sowing of Early Horn Carrots should be made before the turn of the year in frame pits if they are available. Make up a bed of litter and leaves as previously recommended, about 4 feet in depth; tread the materials firm, and cover the bed with soil about 4 inches in depth. Sow the seeds thinly and dust the soil with wood ash as a check to slugs. Little or no water will be necessary until lighter days, when the pits or houses may be ventilated and the syringe used sparingly on sunny days.

General Remarks.—At the end of what, on the whole, has been a good year for vegetables, many kinds are still plentiful and good. Scarlet Runners, Dwarf Beans, and Peas continued in full bearing to a very late period. Autumn Giant and other Cauliflowers have been extra good. Brussels Sprouts, Broccoli, Leeks, and Celery look well, and promise a full supply for some time to come. The present is a suitable time to compare notes and select the various kinds of vegetables for next season's crops. It is difficult to make selections to suit all purposes; those in charge know best the particular requirements of the establishment. Seeds should always be ordered in good time. Where early forcing is contemplated, preparations should be made by forming hot-beds and sowing small quantities of such seeds as Lettuce, to have young plants in readiness when needed in the spring. Push forward all kinds of work and any alterations which are in hand or contemplated, as pressure of work increases daily after the turn of the year. Continue to lift and expose roots of Rhubarb and Seakale, placing them in heat as required. Small quantities only should be forced at one time to maintain fresh and

constant supplies. Much other work can be done during bad weather, including the preparation of stakes and labels and turning heaps of old vegetable refuse. It is surprising at what a rate so-called rubbish accumulates in gardens, but this may be turned to good account in various ways, and made to enrich the soil. Its effects are often more permanent, and especially in heavy ground than when the soil is dressed with animal manure.

THE ORCHID HOUSES.

By J. COLLIER, Gardener to Sir JEREMIAH COLMAN, Bart., Gatton Park, Reigate.

Laelia.—Plants of Laelia autumnalis, L. albida and L. purpurata should be rested for a period after they have flowered; only sufficient water should be given the roots to keep the pseudo-bulbs fresh and plump. The early-flowering varieties of Laelia anceps are opening their flower-buds, and they will be followed in bloom by the white forms. By judicious management the blooming period of this useful species may be extended for several weeks. Laelia pumila and its many varieties will soon have passed the flowering stage, and, as soon as roots develop from the new pseudo-bulbs, any necessary repotting or top-dressing may be attended to. Shallow Orchid pans without side holes form the most suitable receptacles, and they should be fitted with wire handles. The plants thrive when suspended from the roof-rafters of the intermediate house. In repotting, the pots should be filled to one-half their depth with drainage materials, and the compost should consist of a mixture of chopped Al fibre and Sphagnum moss, with a quantity of half-decayed Oak leaves and crushed crocks added. Watering should be done very carefully, very little water will be needed until after the young roots have grown to the pots' sides, whilst during the resting period only sufficient moisture should be afforded to keep the pseudo-bulbs fresh and plump.

Vanda. Vanda Amesiana and V. Watsoniana are in bloom and if the roots are kept moderately dry the flowers will last for a long time in good condition. When the flowering season is over, just sufficient water should be given to prevent the roots from shrivelling, as the plants need a short period of rest. V. Kimballiana has passed out of flower, and should be rested next; the roots again become active when moisture may be afforded in increasing quantities. Plants of V. teres and V. Hookeriana having completed their season's growth should be given a lot of rest, affording them only sufficient water at the roots to prevent their terete leaves from shrivelling. These Orchids should be grown in the lightest position in a house having an intermediate temperature. V. coerulea should be rested for a period after passing out of flower in similar conditions to those recommended for the other species.

Cattleya. Plants of Cattleya Warneri which are growing actively should be stored in the warmest part of the Cattleya house in a light position, and be sufficiently watered at the roots to keep the compost moist until the flowers have opened. The work of repotting should be done immediately after the flowers have faded when new roots usually develop from the bases of the young pseudo-bulbs. The various forms of Cat. Trianae and C. Percivaliana are sending up flower spikes. The plants should be given an increased supply of moisture at the roots, and grow near the roof glass in a light, warm position.

THE HARDY FRUIT GARDEN.

By JAS. HUDSON, Head Gardener at Gunnersbury House, Acton, W.

Flavour of Fruits. I have been gratified during the past season to receive many enquiries with respect to the flavour of out-door fruits. This is a good sign, for if quality were considered before large size more satisfaction would result to the gardeners. The highest coloured Apples are not necessarily the best flavoured.

Fruit for Preserving. Fruit should not, even when plentiful, be used for preserving in a haphazard manner. There is room yet for improvements in the combination of certain fruits for preserving besides the universal mixture of Raspberries and Red Currants. I recently sampled some Blackberry and Rhubarb jam; it was excellent. When more bottles are available there will be a great increase in fruit bottling. The samples of fruit preserves that have been staged at the R.H.S. meetings from time to time have created considerable interest.

The Demand for Trees. There is a very unusual demand on the nurseryman for fruit trees of all kinds, and many planters will have to wait longer than usual before their orders are executed. Whilst waiting for the trees, follow the advice already given to have everything in readiness for planting immediately they arrive.

A Retrospect.—At the close of another year's work in the hardy fruit garden, a few observations on successes and failures may be appropriate. I only remember one similar year of soil general failure here, and that was nearly forty years ago—on that occasion the crops were, so far as Apples are concerned, even worse than in 1916 and the future followed, if I remember rightly, a very severe winter. The shortage in the hardy fruit crops has been attributed to spring frosts and the unfavourable weather of April, but I am inclined to attribute it in some degree to the phenomenally heavy crops in 1917. Insects have been more troublesome during 1918 than for some years past. Aphis on Apple was especially troublesome, but our trees escaped serious injury from caterpillars. Aphides were troublesome early in the spring, but not so much later, whilst red spider was not much in evidence. Mildew did not cause any serious harm; in fact, some plants, including Roses, were remarkably free of this disease. In the coming season it behoves growers to use all measures possible against these common enemies of the fruit cultivator. Trees have made good growth during the past summer and autumn, and from observations made in several gardens there is a promise of plenty of flowers next spring. Both Cherries and Pears look unusually promising in many gardens.

FRUITS UNDER GLASS.

By W. J. GRISE, Gardener to Mrs. DEMPSTER, Keele Hall, Newcastle, Staffordshire.

Planting and Potting Materials. A supply of fresh fibrous turf should be cut and stacked before frost and rains saturate the ground. A rich, clayey loam is the most suitable soil for fruits. In some districts turf soon loses its fibre and in such cases it should be used in a fresh state with plenty of grit, mortar rubble or broken bricks added to keep it open for the free passage of water. Soot lightly scattered over the turves when building the stack, adds to the quality of the compost. Cut grass from shrubbery or other walks will afford the necessary loam from rabbits. Wood ash from the garden fire forms the only available supply of potash at the present time; store the ashes in a dry place as potash is very soluble and soon washed out by rains. A stock of old mortar or lime, rubble, soot, and bone-meal or charcoal should be kept under cover, the soot and charcoal in tubs or boxes. At Keele we have open sheds in which to store horse manure and old Mushroom bed material; it is important to have these materials in a friable condition when required for various composts.

Early Vines. Early Vines are required to produce very early Grapes they should be stood on a bed of fermenting material for a few weeks. Keep the canes tied to the stakes for the present, and with slight syringings with tepid water the buds will break evenly on every part of the rod with little or no fire heat. The canes should then be tied to the wires. In the meantime a minimum temperature of 50° at night is sufficient warmth. When starting early permanent Vines, the requisite temperature may be maintained for a few weeks by placing a bed of fermenting material over the borders. A night temperature of 50° to 55° with a rise of 10° during the day, will be suitable for the first month of forcing. If the Vines are hurried in growth the buds will break irregularly. Maintain a moist atmosphere to assist the Vines into growth, freely syringing the house twice daily according to the weather with tepid water. Keep the evaporating troughs filled with water.

Late Vines. Directly the leaves have fallen from late Vines the laterals should be pruned. Always prune to a strong, plump bud, and, as a precaution against bleeding, paint the cut surface with styptic. During the next few weeks advantage should be taken of bad weather to thoroughly cleanse the house, and top-dress the borders with fresh loam, removing, in the first instance, a few inches of the surface soil. Soak the border with clear water, and ventilate the house to its fullest extent day and night.

PLANTS UNDER GLASS.

By E. HARRISS, Gardener to Lady WANTAGE, Lockinge Park, Berkshire.

Gloxinia. Shake the soil from some of the best matured Gloxinia tubers and place them in boxes of finely sifted leaf-mould. Let them develop in a warm house, and when top growth and roots become active place them in 5-inch or 6-inch pots filled with a compost made of rich fibrous loam, peat, leaf-mould, and coarse sand. After a few days water the soil thoroughly, and subsequently afford water with great care, and continue this treatment until the pots are filled with roots. The plants should be grown in a position near the roof glass in a warm house until they begin to develop flowers, when a cooler and drier atmosphere is more suitable. Fresh batches may be started into growth at intervals according to requirements.

Streptocarpus. This plant is very subject to attacks of mealy bug, and when the pest is established on the leaves it is very hard to exterminate. The plants should be examined at regular intervals for the purpose of destroying any insects which may be present. If plants are required to flower early a few may be placed in a warm house. Remove a little of the surface soil to allow room for a top dressing of fresh compost. A mixture of fibrous loam, peat, leaf-mould, manure from a spent Mushroom-bed and sand forms an excellent rooting medium for Streptocarpus. Young plants in 5-inch pots may be shifted into larger receptacles when they are sufficiently well rooted for transference.

Allamanda. Old established plants of Allamanda may be pruned. If they have filled their allotted space the shoots may be cut hard back to two buds. The plants are in need of a rest, therefore the roots should be kept dry during the winter. Specimens growing in pots may be pruned in a similar manner, and laid on their sides beneath a stage in a cool house until the spring.

THE FLOWER GARDEN.

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

Reconstruction in the Flower Garden.—All will be thinking of re-establishing flower gardening on something like its former basis. One good result here was the tarring of a number of beds and borders four years ago, none of which will probably ever be restored, the general effect being much better without them. One cannot doubt that throughout the country flowers have been employed in the past in gardens much too profusely. That is apart altogether from the question of labour, and consequent expense. There had been for years a lack of restraint in the employment of flowers. It is true that never previously had flowers, as regards colours, been used so artistically, but it is also true that much artistic value was dissipated by the profuseness with which flowers were used. And it was in small places where the sense of proportion was most often lacking in this respect. I have been able by the aid of female labour to keep lawns mown as formerly, or, rather, more frequently, to make it easier for the girls. But gardeners here and there have permitted lawns to go wild, or ploughed them for Potato growing. In the first case there will be some trouble in restoring them to their former condition. It is true that previous to the era of lawn mowers it was not unusual to take a crop of hay annually off lawns, the rest of the season being occupied in keeping down the grass by scythe mowing. Under present day circumstances a very early mowing of the grass should be made, and very frequent re-mowing thereafter until hot weather relieves the pressure.

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AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 38.3°.

Fruits for Small Gardens.

Mr. Bunyard's lecture* on increasing the home fruit supply deserves to be studied by all owners of small gardens. His statement that much might be done to extend the period during which fruit is available is undoubtedly correct, and the wisdom of planting for succession recognised by all good gardeners deserves to be put into practice much more generally than is the case in the small garden of the present day.

For example, in spite of the excellence of their fruits, how rarely are autumn fruiting Raspberries planted in small private gardens? Yet the good varieties are prolific, and yield into October. These fruits are indeed particularly suited to private gardens, for they are not likely, owing to their lack of keeping quality, to become grown on a large scale for market—at all events in any but the drier parts of this country. By the simple device of "tipping" Raspberries in spring, so that the canes are left at varying heights—from 2 feet to 4 feet—the season of fruiting will be extended, for the shorter canes will fruit later. Similarly, the period of Strawberries might be extended by the planting of autumn fruiting varieties. It is doubtful—as Mr. Bunyard points out—whether the owners of small gardens have yet taken full advantage of the great improvement in the Gooseberry, the best varieties of which are among the most delicious of dessert fruit. Here, too, an extended season may be provided by the judicious planting of late varieties.

Mr. Bunyard's golden rule for fruit gathering deserves to be committed to memory. Gather late varieties of Apple and Pear late, and early varieties early—that is, whilst they are still firmly attached to the tree.

The "going soft" at the core, which so often befalls Pears, is frequently due to the fact that the fruit was gathered late.

Needless to say—in the rule observed—late keeping fruit should not be gathered until it is about to fall from the tree.

Mr. Bunyard's advice on keeping fruit will be welcome to those who do not possess a fruit room—wrap Apples or Pears in paper, put them in a box, close the lid, and put the box in a cupboard or shed. The shed need not even be frost-proof.

Those whose gardens are ever troubled with wasps should act on Mr. Bunyard's remark that cooking Plums may be stored for some time when gathered unripe.

The importance of the proper soil-treatment of fruit trees is often overlooked, and, next to the lawn, the fruit quarter is often the most starved part of the garden. Lime is often deficient, and, if so, must be supplied either in the form of lime or else chalk or lime refuse from the manufacture of acetylene gas. For starved, unthrifty trees nitrogenous manures should be used, but excess of such manures must be avoided, as it will result in increased growth and decreased fruit production.

Without a supply of phosphates in the soil fruit crops will be small, and care must be taken to supply any deficiency by a dressing of superphosphate or of basic slag. Mr. Bunyard advocates the extended planting of fruit trees in small gardens. Instead of the Bitter Almond, ubiquitous, lovely, but evanescent in its loveliness, suitable fruit trees should be planted in suburban gardens. Large growing trees, Limes and Beeches and the like, should give place in the small garden to Apples and Pears, and the shrubbery, with its dull monotony of Laurels, should be diversified by the introduction here and there of these fruits. What Canada has done in the extension of fruit growing in the colder parts of the Dominion should be attempted here, and in the north the cold-resisting and late-flowering varieties sidered good value.

With the national programme of housing an unique opportunity will arise for illustrating the possibilities of fruit growing in small gardens, and it is to be hoped that this opportunity will not be lost sight of; in any case, those who have such gardens should read Mr. Bunyard's instructive article with attention, and put into practice the excellent advice which he gives.

* *Journal of R.H.S.*, May, 1918

"Botanical Magazine." — *The Botanical Magazine* for July to December, 1918 (Nos. 1,577 to 1,582 of the work) comprises descriptions and illustrations of the following plants: Sophora japonica, Ramondia serbica, Gongora latisepala, Rhododendron argyrophyllum, var. leiandrum, Govenia tingens, Linum elegans, Alnus firma var. Yasha, Stewartia serrata, Polystachya Pobeguinii, Hypericum laeve forma rubra, Scabiosa Hookeri, Rhododendron orbiculare, Mesembryanthemum fulviceps, M. Elishae, Primula sinopurpurea, Stewartia sinensis, Cereus Tunilla, Odontoglossum praevisum, Berberis Beaniana, Diascia Aliciae, Mesembryanthemum edule, Rhododendron oreotrephes, and Bulbophyllum Hamelinii. Ramondia serbica is a pretty plant for the rock garden, bearing a close general resemblance to R. pyrenaica. Gongora latisepala was presented to Kew as an unnamed specimen in 1914 by the late Lady LAWRENCE. It has brilliant orange-coloured flowers, covered with reddish-brown spots. Linum elegans well deserves its name—it is a native of Greece, and may not prove quite hardy in this country. Stewartia serrata is hardy at Leonardslee, from whence the flowering spray which figures in the illustration was gathered. It is a very striking shrub, bearing pale yellow flowers with crimson blotches on the reverse of the petals. Hypericum laeve forma rubra is a native of the East, and was discovered near Diarbekir in 1841. It is thought by some authorities that the colour of the red form may be attributable to the ferruginous nature of the loam in which it grows. Rhododendron orbiculare, a native of Western Szechuan, bears flowers of a brilliant rosy carmine. The species is fairly hardy, especially in the damp, mild climate of the West of England. Primula sinopurpurea was raised at Kew from seed collected in Yunnan by Mr. G. FORREST. It was described and illustrated in the *Gardeners' Chronicle*, 1917, vol. lxii., p. 241. Stewartia sinensis is also a native of China, namely, of Western Hupeh. The flowers are white, with brilliant yellow anthers. Mesembryanthemum edule is perhaps the finest of the genus. It is a native of South Africa, and in most parts of Britain requires the protection of a greenhouse during the winter. Bulbophyllum Hamelinii flowered in 1902 at the Glasnevin Botanic Garden. It is a native of Madagascar, and thrives best in a tropical house, in a suspended basket of peat and Sphagnum.

Trials at Wisley in 1919.—The Royal Horticultural Society will carry out trials of Dwarf French Beans, Cauliflowers, Lettuces, Parsleys, Early Potatos, Turnips, and Swedes in their Gardens at Wisley, Ripley, Surrey, during 1919. Seeds, etc., for trial should reach the Director of the Gardens not later than January 31, 1919.

Army Stable Manure.—Farmers in Surrey, Sussex and Hampshire who are near enough to Aldershot can obtain manure from the Eelmoor Dump at 5s. per ton. Analyses of Army stable manure show that it is very satisfactory in composition, and at this price must be considered good value.

Royal Horticultural Society War Relief Fund.—A meeting of the War Horticultural Relief Fund was held at the Mansion House on Wednesday, December 18, 1918, at 3.30 p.m., under the presidency of the Lord Mayor of London, Sir HORACE MARSHALL, who was accompanied by the Lady MAYORESS. On the platform were Field-Marshal Lord GRENFELL, the president of the Royal Horticultural Society, and also of the Fund; Lady NORTHCOTE, vice-president of the Fund; Mr. CARL HENTSCHEL, one of the joint secretaries; the Rev. W. WILKS, Sir HARRY J. VEITCH (treasurer), Sir CHARLES WAKEFIELD, Master of the Gardeners' Company, Mr. JAMES W. LOWTHER, the Speaker of the House of Commons, and many others. The Lord Mayor, in the course of his speech of welcome to the audience, read a letter from Mr. A. J. BALFOUR regretting inability to be present, and conveying his best wishes for the success of the Fund. A letter from Lord BURNHAM was also read, to the same effect. Mr. HENTSCHEL then read a letter sent by Monsieur POINCARÉ, the President of the French Republic, to Monsieur CAMBON, the French Ambassador in London, expressing his gratitude to the promoters of the Fund, and one in a similar vein from the Serbian Minister. Sir HARRY J. VEITCH, as treasurer, then gave a few details as to the money which had been received, and the work which it was hoped to do in restoring the devastated lands in France, Belgium, and Serbia, and especially in providing seeds and plants. Mr. JAMES LOWTHER, who described himself as a humble follower of the horticultural craft, gave a graphic description of the devastated districts, over part of which he had travelled, and laid emphasis on the importance of restoring as quickly as possible the fields and gardens which

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JULY TO DECEMBER, 1918.

(FOR SPECIAL HEADINGS SEE UNDER ANSWERS TO CORRESPONDENTS, BOOKS; CERTIFICATES; GARDENERS AND THE WAR; LAW NOTES NURSERY NOTES; OBITUARY; PLANTS, NEW; SCIENTIFIC COMMITTEE; SOCIETIES; AND ILLUSTRATIONS.)

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LIST OF ILLUSTRATIONS.

were so necessary to the life of the people. Sir CHARLES WAKEFIELD dwelt on the permanent nature of the work which it was proposed to do, which should, in his opinion, form a link to bind in friendly comradeship all the peoples of the Allied countries. Lord GRENFELL then proposed a vote of thanks to the Lord Mayor for allowing the use of the Mansion House for the meeting, and for his kindness in presiding. He reminded those present of the historical year 1815, when the victorious allied generals, WELLINGTON and BLUCHER, were fêted in that very hall. The year 1919 was likely to be no less famous in history. The motion was seconded in a few cordial words by Lady NORTHCOTE, on behalf of the women's section of the Fund, and the vote was carried unanimously, the Lord Mayor replying in a very short speech. Before and after the meeting several songs were sung by a Serbian boys' choir.

Apple Monarch.—The new, late-keeping Apple Monarch (see fig. 105), introduced by Messrs. W. SEABROOK AND SONS, is the result of a cross between the varieties Peasgood's Nonsuch and Dumelow's Seedling. The fruits are large—often very large—and handsome in form and colour. The skin is pale green, with a bright red flush which, with the rounded outline of the fruit, at once suggests Peasgood's Nonsuch as one parent, while the open eye, set in a puckered basin, the keeping quality, and brisk flavour, are suggestive of Dumelow's Seedling (Wellington). It should be stated, however, that Monarch is less acid than Dumelow's Seedling and less sugar is needed to make the fruit palatable when it is cooked. The tree has a rather spreading habit, and on the Paradise stock makes a specimen from 12 feet to 15 feet high. There is ample room for a late-keeping and attractive Apple such as Monarch, which is in excellent condition from October to April, and is of fair dessert quality after February.

Contributions to our Knowledge of the Vegetation and Flora of the Islands, excluding Madagascar, of the Western Indian Ocean.—Dr. W. BOTTING HEMSLEY has contributed to *Nature* an article on the Palms of the Seychelles and the Mascarenes—Mauritius, Bourbon and Rodriguez—the new facts, relating to the Seychelles genera and species, being mainly from notes supplied by Mr. P. R. DUPONT, curator of the Botanic Station at Mahe. Since the publication of the veteran Mr. J. G. BAKER'S *Flora* forty years ago, no addition has been made to the number of species of Palms known to inhabit this insular region, noted for its peculiar endemic types of the Palmae. But all those recorded by BAKER still exist in more or less abundance. Altogether there are fifteen species belonging to nine genera, and these genera are, so far as present knowledge goes, all restricted to the islands in question. All are, or have been, in cultivation in this country, but, being mostly trees of large dimensions, they need spacious hothouses for their development. The Seychelles species are six in number and peculiar to the group. They are: Lodoicea sechellarum, Acanthophoenix nobilis, Nephrosperma Van-Houtteana, Boscheria melanochaetes, Verschaffeltia splendida, and Stevensonia grandifolia. Seven species are native in Mauritius, namely, Latania Commersonii,* L. Loddigesii, Hyophorbe indica,* H. amaricaulis, Dictyosperma album,* Acanthophoenix rubra,* and A. crinita.* The five starred species are also reported from Bourbon, and are the only ones in the island. Rodriguez possesses three species, Latania Verschaffeltii and Hyophorbe Verschaffeltii, both endemic, and Dictyosperma album, which is also common to Mauritius and Bourbon. The Coconut Palm is omitted, as it is not indigenous. Dr. HEMSLEY also describes a number of new Seychelles and Aldabra plants in the *Journal of Botany* for 1916 and 1917. Among these are species of Parinarium, Weihea, Begonia, Jasminum, Northea, Vitex and Dioscorea.

FIG. 105.—APPLE MONARCH: A NEW LATE CULINARY VARIETY.

War Item. M. ALBERT MAUMENÉ, late Editor of *La Vie à la Campagne*, was seriously wounded in the early days of the war. We learn from a French friend that M. MAUMENE'S services are being utilised by the Ministry of Agriculture.

Bounty for the Australian Evaporated Apple Industry. *The Board of Trade Journal* announces that an Act has been passed by the Commonwealth Parliament to provide the sum of £12,000 for the payment of a bounty upon the export of Apples grown and evaporated in Australia and sold to the Imperial Government. The bounty is to be paid to the growers, subject to compliance with awards determining what are fair and reasonable wages and conditions in the growing and the evaporating of Apples. In introducing the measure, the Minister for Trade and Customs stated that for several years the export of Apples to oversea markets totalled from 1,000,000 to 1,250,000 bushels yearly, but owing to the lack of shipping facilities there could be no export in 1918, hence the position of the growers was very difficult. As the price was too low to allow the industry to be carried on, the Government decided to give a bounty of 10 per cent. on the basis value of 7d. per pound, at which 1,800 tons of evaporated Apples were sold to the Imperial Government. Fifty pounds of Apples yield only about six pounds of evaporated Apples, and care would be taken that the bounty would be paid only to the growers. It is claimed that notwithstanding the bonus it does not pay the producers to grow fruit for evaporation at the price offered. The bonus will be paid chiefly to Tasmanian growers, as the bulk of the evaporated Apples for export will be produced in that State. The industry of evaporating Apples to any considerable extent has been quite a recent development in Australia, chiefly in Tasmania. The process follows closely that in operation in North America, and a portion of the equipment for new plant was procured in New York. Two of the most prominent evaporators in Tasmania are visiting Canada and the United States for the purpose of obtaining knowledge of any improved methods in connection with the drying of fruits and vegetables.

THE FLOWER GARDEN.

THE REPLANTING OF FLOWER BORDERS.

A CORRESPONDENT has asked us to advise him how best to replant two flower borders, each 40 feet by 9 feet. These borders slope down to a tennis court which is about 2 feet below the general level of the garden; the soil is light. Very many of our readers have devoted their flower borders to vegetable production during the past four years, but in view of happier times in the near future they will be considering schemes of planting whereby such borders may be rendered

beautiful again; to them, as well as the correspondent referred to, the following reply may prove both suggestive and helpful.

Our correspondent's query seems to indicate that the borders have a rather sharp slope; if such is the case it would be advisable to make a retaining edge of stones, or, if these are not suitable, an edging composed of one species or variety of plant would be advisable, and there is a large choice of plants suitable for this purpose. Any of the following subjects may be used with excellent results. Pinks in variety make a charming edging, their glaucous foliage giving a furnished appearance to the front of the border at all seasons; one variety, such as Mrs. Sinkins, could be used, or, better still, if it can be obtained, the old White Fringed Pink. Saxifraga umbrosa (London Pride) makes a useful edging, as it will grow anywhere and is very charming when in flower, as also is the common Thrift and its white variety—Armeria maritima and var. alba. Santolina Chamaecyparissus (Lavender Cotton) makes a capital edging, and may be kept in shape by clipping; its silvery-grey foliage provides an excellent foil to bright flowering plants in the border. Iberis sempervirens is also suitable for a good permanent edging, and gives a mass of white flowers during April and May. Dwarf Lavender makes a charming and fragrant edging. Cerastium tomentosum, with silvery-grey foliage and masses of white flowers, is also excellent for this purpose, and Nepeta Mussinii is another charming subject for an edging. If it is necessary to use stones to provide a retaining edging then a wide choice of planting material can be found among subjects usually grown in the front line of a herbaceous border.

As the border is empty the opportunity should now be taken to prepare it well by manuring and deep digging or trenching.

In the following selection of plants it is taken for granted that good groups of each sort will be planted, in preference to single plants repeated at intervals. In the absence of a plan it may also be taken for granted that there will be, roughly, three lines of plants, or, more correctly, three lines of groups in the border; this would ensure each group being some 3 feet in depth and passing into the others in an irregular fashion. Some of the second line groups would come well to the front of the border, and the back groups would in part come into the middle groups, and thus break up the lines of the border.

For the first or front line of groups Cerastium tomentosum, Nepeta Mussinii, Iberis sempervirens, Campanula carpatica, Pink Mrs. Sinkins, Aubrietia var. De Mules or Lavender, Gypsophila repens, Heuchera Zabeliana, Campanula carpatica var. alba, Alyssum saxatile, Crucianella stylosa, Thalictrum adiantifolium, Phlox Newry Seedling, and Sedum spectabile will serve.

For the second line of groups a good selection would be Phlox Frau A. Buchner, or Mrs. Jenkins, Silvia virgata, Chrysanthemum maximum var. Mrs. C. Lowthian Bell, Paeony Reine des Roses and P. albiflora, Iris pallida var. dalmatica, Anemone japonica var. Whirlwind (white) and var. Queen Charlotte (rose), Erigeron Quakeress, Phlox Elizabeth Campbell, Eryngium planum, Campanula persicifolia var. Moerheimii, Helenium pumilum var. magnificum, Gypsophila paniculata var. flore-pleno, Sidalcea Listeri, Pyrethrums James Kelway and Queen of the Whites, and Veronica subsessilis.

The third, or back line of groups should consist of taller subjects, such as Aster Robert Parker, Delphiniums—seedlings or named vars. such as Duke of Connaught (bright blue), or Persimmon (light blue), Lathyrus latifolius var. White Pearl, Verbascum Chaixii, Echinops nivens, Aster cordifolius elegans, Achillea Eupatorium, Hollyhocks, mixed, single or double; Thalictrum aquilegifolium, Mulgedium (Lactuca), Bourgaei, Lupinus polyphyllus (blue and white), and Kniphofia Lachesis.

The planting scheme for the second border may differ from the first, and include the following plants in the front line of groups: Statice latifolia, Arabis albida var. fl. pl., Gaillardias, Pinks, Geum Mrs. Bradshaw, Achillea Ptarmica var. The Pearl, Potentilla Gibson's Scarlet, Stachys lanata, Pentstemon barbatus, Chrysanthemum Parthenium var. fl. pl., Aster Linosyris, Heuchera sanguinea, Geranium sanguineum, Saponaria officinalis alba fl. pl., Oenothera Youngii, Polemonium coeruleum and its var. album.

For the middle or second line of groups we advise Dictamnus albus, Anchusa italica var. Dropmore, Sidalcea candida, Phlox Etna, Lychnis chalcedonica, Kniphofia Saundersii, Galega officinalis var. alba, Verbascum densiflorum, Inula glandulosa, Thalictrum glaucum, Aster ericoides, Morina longifolia, Malva moschata var. alba, Poterium obtusatum, Papaver Jenny Mawson, Hemerocallis flava and Aster acris, while for the back or third line of groups suitable subjects are Acanthus mollis, Cephalaria alpina, Aster Beauty of Colwall, Bupthalmum cordifolium, Delphiniums, Aster Chastity, Hollyhocks, Helenium Riverton Gem, Bocconia cordata, Aconitum Wilsonii, Chrysanthemum uliginosum, Aster rubra, Helianthus rigidus var. Miss Mellish, Delphiniums, Eupatorium purpureum and Spiraea Aruncus.

The selections given above may appear rather restricted in variety, but, as the soil is described as sandy, some subjects liable to suffer from drought have been omitted. Further, the personal taste of the planter must decide whether or not there should be greater variety and smaller individual groups.

Many hardy spring-flowering bulbs may be planted between the groups of herbaceous plants. As their foliage dies down Wallflowers, Myosotis and other spring-flowering subjects will serve to brighten the bare spaces. Biennials, such as Sweet Williams, Canterbury Bells, and Coreopsis grandiflora, may be used to fill spaces between other plants. Pentstemons are very useful in this connection, especially the varieties Southgate Gem and Crimson Gem, while East Lothian Stocks and Antirrhinums in many fine varieties are also very useful, and both can be raised in heat early in the year.

Some of the best hardy annuals prove useful for maintaining a continuous display. Mignonette should be sown wherever there are likely to be any bare patches. Sweet Alyssum, Bartonia aurea, Coreopsis, Candytufts, Chrysanthemum carinatum vars., Clarkias, Eschscholzias, Godetias, Larkspurs, Lavatera trimestris, Lupinus nanus and L. Hartwegii; Malope grandiflora in crimson, rose and white forms, Nigella hispanica, Portulacas, and Platystemon californica, are all useful annuals, and most of them have a long flowering season.

ON INCREASED FOOD PRODUCTION.

TOO MUCH-ALIKE POTATOS

In my early days our people grew something like a dozen varieties of Potatos, all of which I could readily identify or recognise by the characters of the stems and foliage, while the tubers were all very distinct and easy to determine. I could recognise them on other farms and readily detect something different. The groups of similar varieties mentioned by *E. J. Collins* (p. 226) reminds me that I have a list of thirty of the Up-to-Date type, fourteen almost or quite indistinguishable from Abundance, six of the Beauty of Hebron type, five like Great Scot, three like The Lochar, and three like Mr. Bresee. The chief difficulty of these much-alike varieties is the impossibility of separating the tubers when they get mixed. The opportunities for mixing them are many, without implying carelessness. If several of them are grown in one field it is quite impossible to prevent mixing them, if lifted with a plough or Potato-digger.

This mixing would not much matter, apparently, if all the varieties were similar in character, quality, and productiveness, but some might be of recent origin, vigorous and disease-resisting, while some might be immune to wart disease and others not. In these latter cases mixing would be a decided evil, especially in districts where black scab prevails. Dominion has tubers similar to Up-to-Date, but is immune to wart disease, and this is a decided difference, for I know of no others of the group that possess that quality.

All the Potatos of my early acquaintance flowered freely, except the second-early, Glenberrie Early, which invariably dropped its flowers in bud. A large proportion of them produced berries in the open fields. Now these two features have largely disappeared. According to my observations, freedom of flowering is largely a question of climate, soil and surroundings. Flowers are far more prone to drop in bud in gardens and warm, sheltered areas than in good soil in exposed fields. The dropping of the flowers, the growing lack of pollen, and the similarity of many varieties, both in tubers, foliage, stems and flowers, seem to me to be evidence of too much in-breeding in order to secure productiveness, as well as white-skinned and white-fleshed tubers. Having regard to the future, and the raising of new varieties, it would be well to use parents of more distant affinity, and not overlook the advantage of pollen-bearing varieties as parents. *J. F.*

POTATO MAJESTIC.

THE remarks of Mr. John Robertson, on p. 235, bear out what I have experienced and heard of from hundreds—the wonderful cropping power of this new Potato. Your correspondent states that the seed supplied to him was "as grown," and by no means a good sample. if the tubers had all been of proper seed size the quantity purchased would have planted a wider area, with a correspondingly greater yield." That was true last year, and I fear it will be true to a great extent this coming planting season. I wonder if Mr. Robertson had many seed-sized tubers in his crop? It is quite the exception to get many. Last week I spent some hours with a friend who grew about 100 acres of Majestic, but I could not persuade him to sell me any dressed through a 2½-inch riddle. "No," Mr. Cuthbertson," he said, "but you can have as many as you want 'as grown.'" Let me relate an experience my firm had the other day. A farmer who grew several acres of Majestic, and whose crop we had inspected several times, undertook to deliver tubers dressed through 2½ and over 1¾ inch mesh. He did this at a price exceeding £30 a ton, and out of each ton, before that lot was fit to sell in small quantities, had to be taken 5 cwt. per ton! A few tubers were too big, a number were bruised, and many unshapely. It is, however, not a bad feature of a new Potato that it gives plenty of big tubers. One of our best-known growers and merchants in the south of Scotland simply stood aghast as his crop was being turned out—it was nearly all lumpers together. There is a great interest in and an excellent demand for Majestic. Unfortunately in some districts cut seed did not do well last season, and it would be doing a public service if your readers would write of their experience with cut seed. In East Lothian many acres were almost total failures where seed had been cut. After planting, dry weather set in, and the cut sets did not grow. My own experience was that 5 to 10 per cent. of the cut sets failed, not more. My advice is to sprout the sets about half an inch before cutting; cut carefully, and not into too small pieces, a few days before planting, and dust the cut surfaces with powdered lime. *W. Cuthbertson, Duddingston, Mid Lothian.*

HOME CORRESPONDENCE.

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

Flowers in Season.—We gathered our first blooms of Iris stylosa on December 5. Erica lusitanica, E. carnea, E. c. alba, and E. mediterranea hybrida are in flower, and Rhododendron praecox is showing colour. We have had a fine lot of late Roses, especially Zepherine Drouhin, which is now a lovely colour. This variety has a beautiful scent, and it is thornless. The Diplopappus is in flower, and is always charming for its foliage alone. Primroses and Daisies and Violas are flowering freely. I have never seen Jasminum nudiflorum better in flower; no recently introduced plant is its equal as a winter-flowering subject. Chimonanthus fragrans is flowering, and we have collected a good lot of seed this season. Many Rhododendrons are well advanced in bud, too far, I am afraid, to withstand frost. Raspberries are fruiting well and freely, and I have gathered several good dishes of the berries quite recently. *W. A. Cook, Abbots Wood Gardens, Guildford, Dec. 17.*

Wireworm.—The references to wireworm by Mr. McGlashan and Mr. Molyneux on pp. 235 and 243 induce me to relate a remark which I heard made this spring, with a view to combating the pest. It was to roll the land at night with a heavy roller, but rolling would not be effective if done during the day. I give the observation to what it may be worth, and what rolling seems to cut the question extra large area, it might be tried on a small scale to see if there is any truth in the statement. *E. B. Fotu.*

Silver Leaf Disease. Writers on Silver Leaf disease almost without exception display weakness in their suggested remedies to combat the disease by simply saying "burn the trees!" Destroying affected trees is but a poor solution of the difficulty. I do not wonder at the suggestion when writers cannot offer any practical remedy. Is this because they have not tested one? "H. H." in his opening paragraph on p. 215, states: "Trees so affected are incurable right." Certainly they are if no practical steps are taken to deal with the fungus and destroying them. This bald statement that the trees once affected are beyond cure I flatly contradict, as I know it is possible to effect a cure in some cases certainly. Later, "H. H." says: "Every tree which develops the silvered foliage of this disease should be looked upon as stricken beyond recovery." This assertion plainly proves to me that H. H. has no practical knowledge of cures. Destroying a tree is not a cure. Has H. H. made any attempt to cure the disease in a tree? I must not believe in the theory that the spores are carried by the wind. I rather hold the opinion that the trouble comes from the roots in the same way that canker affects Apple trees. Mr. Lynch says: "It is true that the spores germinate and attack the trees through a wound." What proof have we of this beyond supposition? Has Mr. Lynch ever detected such wounds, clean at first, watched the reception and progress of the spores in their germination and growth, and seen the result in actual silver leaf affection. Proof is what I am seeking; theorising is weakness to me. I want to hear of some practical remedy that has been tried and of its failure or success. We do not get the slightest testimony of such trials from writers generally. "H. H." does little more than quote what the various leaflets have told us, and these are well known to growers generally. I know quite well it is possible to cure silver leaf disease in Apple trees, but not by cutting down the trees. The rooting conditions must be altered. I fear it is little use looking to scientists and theorists for practical advice on this subject, therefore we must map out our own salvation in this serious affection of fruit trees, which, if allowed to go on, will do much damage, and dishearten planters. *E. Molyneux.*

In reply to Mr. Molyneux and other recent correspondents, might I suggest that perhaps the reason why the Food Production Department does not suggest other curative measures for Silver leaf is that it is unaware at the present time of the existence of any alternative remedy which can be applied on a large scale and be relied upon to give satisfactory results. The measures advocated in the Food Production leaflet have been tried extensively with success, hence their recommendation. It is known that several workers have treated small groups of silvered trees in other ways with apparent success, but whenever these methods have been applied on a large scale the results, so far as I am aware, have been unsatisfactory. It is not often realised that there is probably a natural recovery from this malady of 10 per cent., hence the results of treatment of individual trees are often misleading unless adequate controls are kept. Papers in the *Journal of Agricultural Science* for 1911 and 1913, summarised also in the *Journal of the Board of Agriculture* and in *The Gardeners' Chronicle*, gave an account of my researches on this disease up to that year. Since that time much further work has been done both at Cambridge and in co-operation with Mr. M. A. Bailey, of the John Innes Horticultural Institution, Merton, but the exigencies of the war have unavoidably delayed the publication of the results of these investigations. It is hoped, however, that present conditions will allow of this being done in the near future, and of the work being continued with increased vigour. Our further investigations support the view expressed by me in 1915 that Silver leaf disease is a general pathological condition which may be induced by various causes, by far the most important of which from the economic standpoint is the fungus Stereum purpureum acting as a wound parasite. There is no evidence at present that the disease is due to a soil organism. With regard to the statement of Mr. H. S. Hayward that he has not observed Plums, Cherries and others on their own roots affected by the disease, he may be interested to know that the common Laburnum growing on its own roots is often affected by Silver leaf in private gardens, chiefly because it is usually so severely cut back that the fungus has abundant opportunity to effect an entrance. *E. F. B.*

Rabbits and Fruit Trees. *Market Grower* (p. 230) is doubtful as to the right way to protect young fruit trees from rabbits gnawing the bark. I advise *Market Grower* to give up the practice of using wire netting and use Bentley's Tree Protecting Paint, which he will find saves much expense and labour. The surroundings of an orchard of 7 acres here are fairly well stocked with rabbits. Wire netting was formerly used for protecting the stems, but it always needed attention after rains were turned in the orchard to feed. I was advised to try Bentley's Tree Protecting Paint, which I did with good results. I used it Oct. last this year and as a good substitute for rabbit skins. *C. Dixon, Holy Wells Park, Ipswich.*

The Deliverer of Trees. At this season of the year nurserymen receive many complaints of the delay of parcels of fruit trees on rail, and many fear that such trees if more than a few days out of the ground will suffer. With careful packing this is not so. We heard recently from a customer whose trees were lost on the rail for three months last year, and when they finally reached their destination they were planted, and have thrived well since, showing no ill effect from their long absence from the soil. *George Bunyard and Co., Ltd., Royal Nurseries, Maidstone.*

SOCIETIES.

NATIONAL CHRYSANTHEMUM.

A MEETING of the Executive Committee was held on the 16th inst., at the offices of the British Florists' Federation, Covent Garden. The attendance was good, and Mr. Thos. Bevan presided.

The interim financial statement proved highly satisfactory, and promised a balance in hand at the end of the year, with no liabilities, and a Reserve Fund of £75 still untouched. The sub-committee appointed to draw up lists of desirable early flowering Chrysanthemums reported that considerable progress had been made in reducing the numbers of names of varieties in lists obtained. The Committee agreed the Society should become attached to the Chamber of Horticulture, and that a show should be held on November 4, 1919, in conjunction with the meeting of the Royal Horticultural Society fixed for that date. Provisional arrangements were made for Floral and Executive Committee meetings in the coming year, and the annual meeting will be held as usual on the first Monday in February.

An interesting discussion took place concerning the future work of the Society, and proposals to hold general meetings, with lectures, after the business meetings of the Committee, and to arrange for a scheme of lectures for affiliated societies, were favourably considered.

CROPS AND STOCK ON THE HOME FARM.

EELWORM IN CORN.

IN the October number of *The Journal of the Board of Agriculture* Professor Somerville has an interesting and enlightening article on "Ear Cockles in Wheat," with illustrations of an ear of Wheat, showing the cockles, which are the foundation of stem-eelworm, and so detrimental to a crop, not only of Wheat, but more especially of Oats.

Amongst farmers ear cockles are known as burnt Corn, and are considered by some to be harmless. No doubt this trouble is widely distributed; probably it is most serious in the south and south-west of England. In Hampshire it is very troublesome in some seasons, and is more marked in Oats than in Wheat, for the reason that Oats usually follow Wheat.

The cockles or seed of the eelworm are originally produced by the Wheat crop. The affected ears shed their false Wheat grains at harvest time; they lie in the soil, and develop the following year in the Oat crop. It is safe to assume that the whole cause of the attack is through sowing seed containing ear cockles, generally introduced in Wheat. From experiments carried out with affected ears of nursery Wheat sown in pots Professor Somerville gives some startling results. In one instance one cockle was sown in the centre of the pot, and although there were not so many ears attacked, nor so many cockles produced as where more cockles were sown, infestation was sufficiently pronounced to indicate the damage that may be done to a field of Corn even if the number of cockles in the seed grain is a comparatively small one.

It is found that the eelworms liberated from the single cockle had considerable power in moving through the soil, as was evident from the fact that the outside plants in the pots were almost as badly attacked as the plants growing in the centre. Professor Somerville deserves the thanks of all farmers for drawing attention to this subject.

Some farmers are not nearly so careful as they should be in selecting their seed Wheat; too many make the mistake of sowing the seed direct from the threshing machine, which cannot be expected to take out such impurities as cockles, for example.

Clover sickness, too, may easily be pronounced owing to the presence of eelworms in the soil, therefore this is another reason why farmers should be more careful with seed grain, as Clover often follows Wheat.

For the eradication of eelworm in soil Strawson's "Vaporite" should be a valuable aid. I hope to give this preparation a thorough trial in the coming season, especially for an Oat crop following Wheat affected with eelworm if the seed was imported. I hear wonderful accounts of the value of "Vaporite" on market garden crops, how it enables cultivators to grow almost any crop, and especially Swedes, that formerly would not succeed on a particular soil.

For agricultural crops cereals especially, the makers advise 2 cwt. per acre, to be evenly distributed over the land and ploughed in, which is better than harrowing it in from surface sowing. The point is, to have the "Vaporite" thoroughly mixed with the soil, seven days at least before the seed is sown.

CHEMISTRY OF THE SOIL.

What a lack of knowledge there is among cultivators, and not only among farmers but horticulturists, too, in the determination of the deficiencies or excesses of certain constituents

in the soil! To those who are almost entirely dependent upon artificial fertilisers for increasing the productiveness of their land a knowledge of how to determine what is lacking in their particular soil would be of very great value. From recent utterances we are led to believe that much assistance is to be given to cultivators of the soil in some form or other in the near future, and I suggest that help in this direction would be one popular way of rendering assistance, either in disseminating knowledge or in cheapening fees for analyses of the soil. Even better would it be to set up in each county a centre where soil would be analysed free of charge.

SMALL HOLDINGS.

In election speeches all sorts of suggestions have been made about small holdings, and that they should be encouraged I most heartily agree. A Labour candidate recently gave me a shock by saying, "Small holdings have been a failure, because the men know nothing of the business. The thing to do is to get a Government that will use the land for the people, then set up colleges to give the people an opportunity to learn the business of cultivating the land." My experience of small holders does not coincide with this statement from a town-dweller. There is no more deserving person than an up-to-date small holder. What he sincerely desires is improved transport facilities whereby he can convey his produce more promptly to the market or shop, as the case may be. There are many amateurs, cottagers and allotment holders who would produce much more food for the people if they had better means of transport. His second point is greater security of tenure and full compensation on quitting. Few persons realise the labour a practical small holder or allotment cultivator spends on such details as trenching the soil, not to mention the large amount of manure he applies, as an absolute necessity to obtain the best results. To be discharged from such a holding at short notice does not seem right.

POULTRY.

With the more liberal release of "tail" Corn and an extension of food generally, poultry keepers are looking hopefully to the near future when the industry will shortly become nearer its normal pre-war condition.

The months of October and November are proverbially the most troublesome of the whole year for egg production. The pullets in December, when carefully timed to hatch at the right period, give eggs when most needed, and with the added food they will continue to lay. During the autumn and winter the semi-intensive system of poultry-keeping is infinitely the best. A careful person will produce more eggs from ten birds under this method than another will with three times the number under the ordinary farmyard conditions, which all too often means allowing them to roost in none too clean a building, and letting them out early in the morning with a view to finding the bulk of their food no matter what the weather is. The fowls, in such conditions, find their way to the nearest shelter from wind, cold or rain, where they remain, "humped up," for the bulk of the day, or so long as unfavourable conditions continue.

On the semi-intensive plan, a warm, clean house is provided, with plenty of exercise in the scratching material, such as chaff, dry leaves, or caving, amongst which the Corn is fed. To obtain their food the birds have to seek it by scratching, and thus keep themselves warm. During wet weather they are not let out in the open, but kept warm and dry. Liberal feeding of poultry under the various conditions is the correct method, no doubt, but excessive feeding is unwise at any time. Turkeys, cockerels, ducks or geese intended for killing should be restricted in their opportunity for exercise; indeed, they are all the better if shut up entirely, and fed on soft food such as Oatmeal and milk, when obtainable.

PITTING SWEDES.

Where Swedes are grown for the use of ewes and lambs in March and April it is a good plan to preserve them from probable injury by frost by "pitting" them during December in the field where they were grown. Not only does this method of storing the roots protect them from frost, but it maintains their feeding value, which they lose when allowed to remain standing and when making new growth toward seeding in spring. By this action the roots become hard and "woody," and of much less value from a feeding point of view. The method of "pitting" consists of pulling up the Swedes, putting them into heaps—with the roots, tops and soil them into heaps—with the roots, tops and soil intact—of about 6 bushels, and covering them intact—of about 6 inches of soil, which will ward off much frost; by this covering air is largely excluded, thus checking the tendency to growth. When required by the sheep, the soil is put back into its place and the roots spread out thinly some days before the sheep reach them, to enable the blanched tops to wilt, which renders them less likely to scour the lambs.

PIGS.

During the months of December and January, which are not ideal periods for the birth of young pigs, greater attention is necessary to the sows and their young than two months later, when the weather is warmer. All breeding sties should be kept warm, free from draughts, and in a place with a southern exposure, so that the newly born pigs may have the advantage of sun, which they revel in even when but two days old. A close, wooden floor with a gentle slope is an advantage over one of brick, cement, or even earth, being warmer, and preventive to a great extent of cramp in the young pigs, which is all too common when cement floors are used. After birth of the young the sows should be carefully, and, as time goes on, liberally fed with milk and meal. The young pigs, too, should be quickly encouraged to drink milk in a separate trough in an adjoining stye where they are apart from the sow, who seems to think all the food is for herself only. My plan is to have a temporary hole through the partition of one stye to the next, through which the small pigs soon find their way. *E. Molyneux*

TRADE NOTE.

MESSRS. HURST AND SON'S 75TH ANNIVERSARY.

AT the invitation of Mr. Edward and Mr. William Sherwood, the staff of Messrs. Hurst and Son, Houndsditch, dined at the Holborn Restaurant on the 18th inst. Mr. Edward Sherwood presided, and was supported by his brother and sister (Mrs. Campbell), Sir Thos. Mackenzie, High Commissioner for New Zealand, Mr. W. Atkinson, Mr. G. Townsend, Mr. G. J. Ingram, Mr. H. Morgan Veitch, Mr. Geo. Monro, jnr., Mr. Chambers, of the Seed Section of the Food Production Department, Mr. B. Wynne, Mr. C. E. Pearson, Mr. C. H. Curtis, Mr. Macselfe, and Mr. May were among the visitors. The departmental managers acted as vice-chairmen at the several long tables. Altogether the company numbered about 190, including many women workers.

After the loyal toasts had been duly honoured, Sir Thos. Mackenzie proposed "Continued Success to the Firm," and in doing so referred to the sympathy that had always existed between the employers and employed at Messrs. Hurst and Son's establishment; to the high esteem in which Mr. Edward Sherwood's ability and experience were held by Government Departments; to the fifty men who had donned khaki, several of whom had made the supreme sacrifice; and to the need for using the raw materials produced within the Empire for the Empire's needs, so that the Germans would never again be in the position to bid for world power. Mr. Edward Sherwood, in responding, expressed the pleasure he felt at seeing so many members of the staff and so many visitors present, and said all had worked hard and done their best during four and a-half difficult years. On occasion, as when they had to send a big consignment of seeds to Serbia, and when they had to send 250 tons of seeds to the Balkan Peninsula, they had to work hard, and at great speed, but no one had slacked. The past 25 years has been a time of steady progress for the firm, and he hoped that 25 years hence all would be present at a similar friendly gathering.

Mr T. N. Cox proposed "The Visitors," to which Mr. W. Atkinson and Mr. G. Townsend responded, and each referred to the proud position Messrs. Hurst and Son deservedly hold in the seed trade throughout the world. Mr. Carey Tucker proposed "The Ladies," and a lady member of the staff, Miss Bardwell, responded most ably. "The Staff," proposed by the Chairman, gave Mr. Sherwood his opportunity of referring to work loyally accomplished, and the way women had taken the place of the absent men. He also stated that this occasion was really the celebration of the firm's 75th anniversary. Messrs. D. Bryant, F. W. Locke, and J. E. Dixon replied, and each emphasised the point that there would be little industrial unrest if employers generally treated their employees as Messrs. Hurst and Son did.

The toast of "The Chairman," accorded with musical honours, was proposed by Mr. S. N. Sampson, who expressed the generally felt hope that Mr. Sherwood would preside 25 years hence, when the firm celebrated its centenary. Mr. Sherwood, in rising to respond, received quite an ovation. He returned thanks for the good wishes extended to him and his brother and sister, and said it was the intention of the firm to revive the annual outing and holiday for the staff, at Kelvedon, in the coming year.

A very full musical programme was provided, and the whole proceedings were most enjoyable.

ENQUIRY.

FUMIGATING PAPER.

WILL any reader inform me where I can procure Appleby's Tobacco Paper for fumigating purposes? *J. R. B.*

ANSWERS TO CORRESPONDENTS.

NAMES OF FRUITS: *R. A. P.* 1, King of Tompkin's County; 2, King of the Pippins; 3, Braun'ey's Seedling.—*P. T. W.* 1, Beurré Chairgeau; 2, Catillac; 3, not recognised.—*S. C.* 1, Adams's Pearmain; 2, Ribston Pippin; 3, probably Dutch Mignonne; 4, King Harry.—*E. C. S.* 1, Calville St. Sauveur; 2, Golden Russett.—*M. T. G.* Hanwell Souring.—*H. B.* Lane's Prince Albert.—*B. B. T.* Beurré d'Anjou.—*J. O.* Cellini.

SOIL FLOODED BY RAIN AND SEA WATER: *J. H.* The soil, as represented by the samples sent, is in a very inert and unfertile condition. Thorough drainage is essential, and means should be taken to prevent flooding by sea water. Floods of sea water are very detrimental to soil in which garden crops are cultivated. The soil lacks fibre, and is deficient in lime. After the land has been drained it should be deeply cultivated, old manure and charred garden refuse being added as the work proceeds, with some basic slag. In the spring, about three weeks before sowing or planting, apply about 1 lb. of air-slaked lime to the square yard, and lightly fork it in. If manure is not available now, apply the lime at once, ridge up the soil as roughly as possible, and add well-decayed manure later in the winter. The presence of so many dead worms was due to the flooding, particularly to the sea water.

SCALE ON PEACH TREES: *G. B.* Caustic alkali would be a dangerous specific to use for the destruction of scale insects on Peach trees under glass, and cannot be recommended. Both flower and wood buds are extremely delicate, and their protective covering is easily penetrated, being of an absorbent nature. A safe and efficient remedy is Gishurst Compound, used at the prescribed winter strength, and at a temperature of 100° to 110° Far., after having first syringed the trees with hot water at least 10° warmer. The best method of using this specific is to apply it with a new paint brush, stroking each shoot upwards only. If this is done thoroughly it should be effective in destroying the scale insects.

Communications Received.—A. C. B.—E. B.—J. C.—Le F.—J. M.—M. B.—D. V.—H. C.—F. R. S.—R. H.—M. A. E.—W. S. J.—N. A. S.—S. C. B.—F. E. G.—W. P.